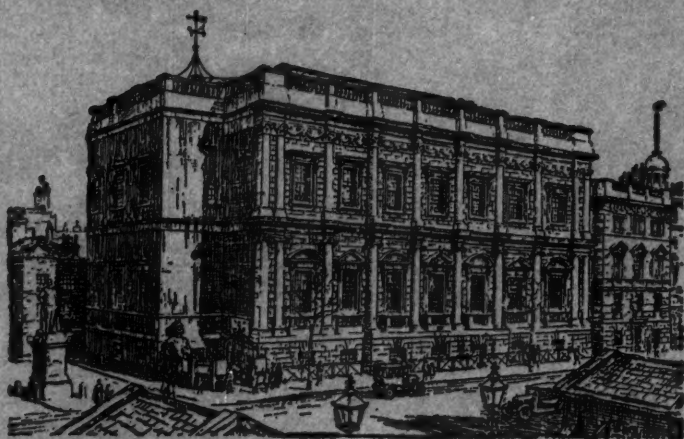


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# JOURNAL



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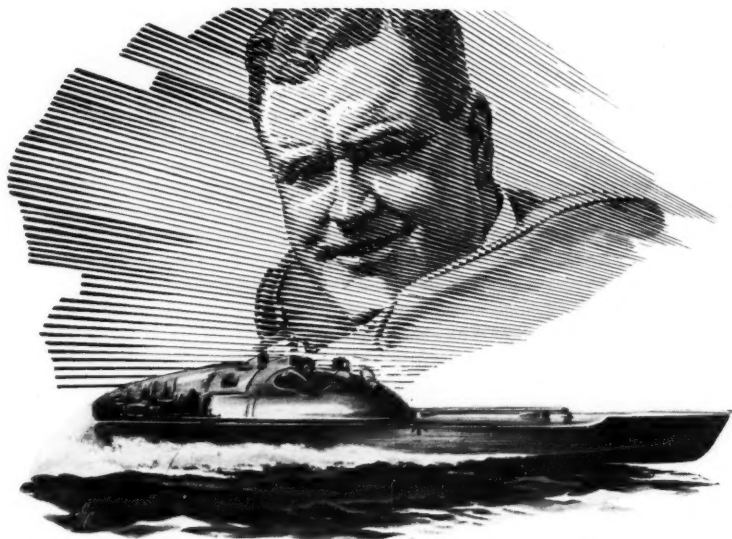
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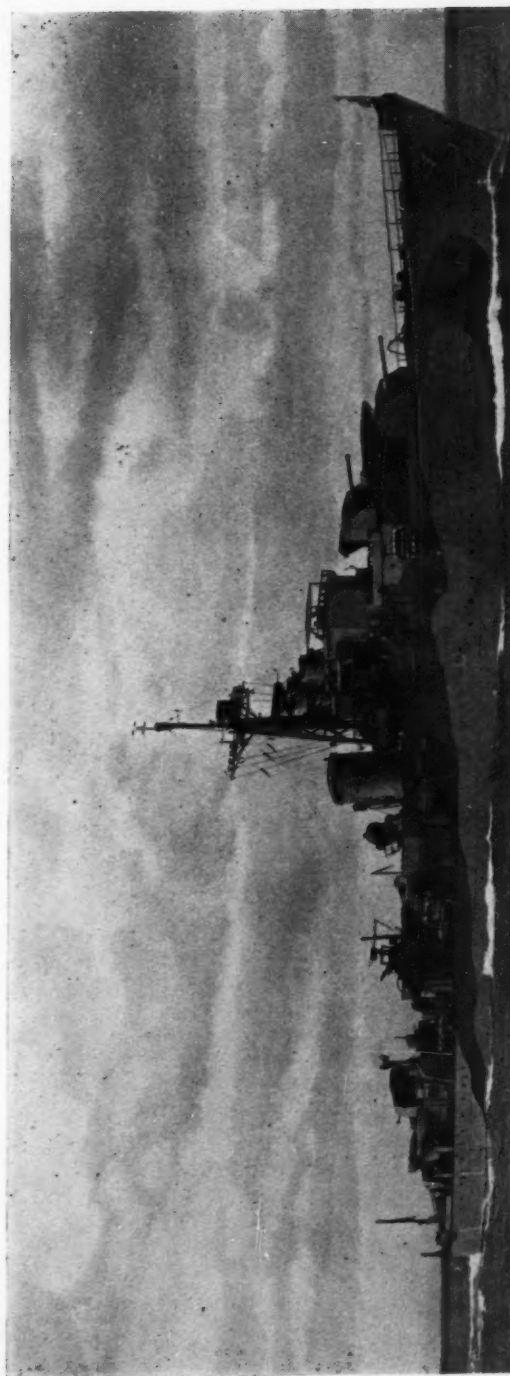
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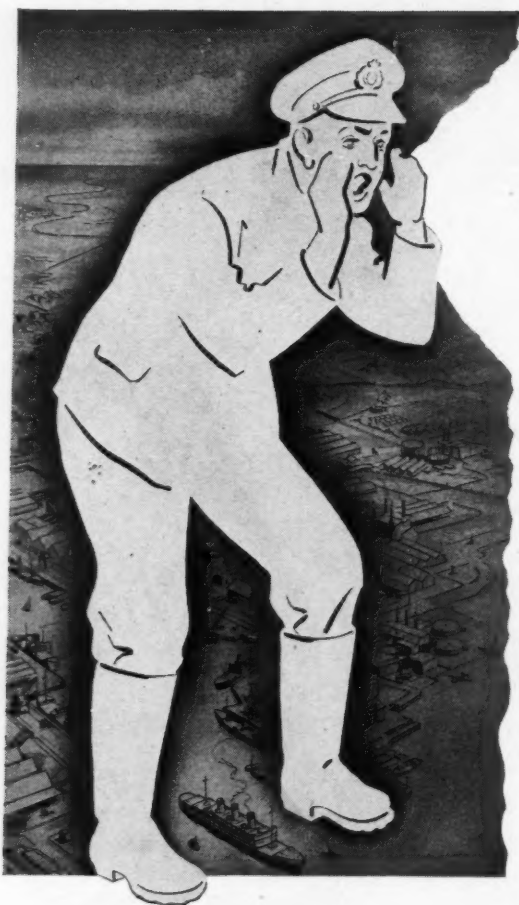
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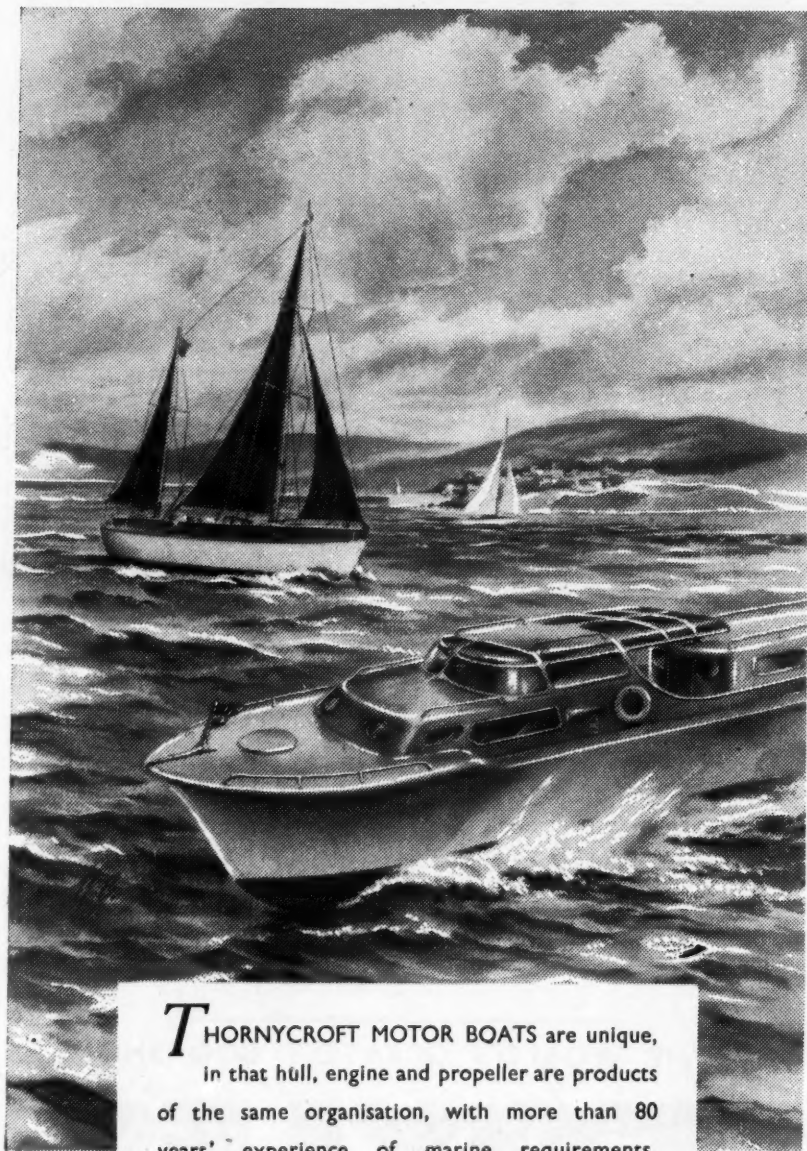
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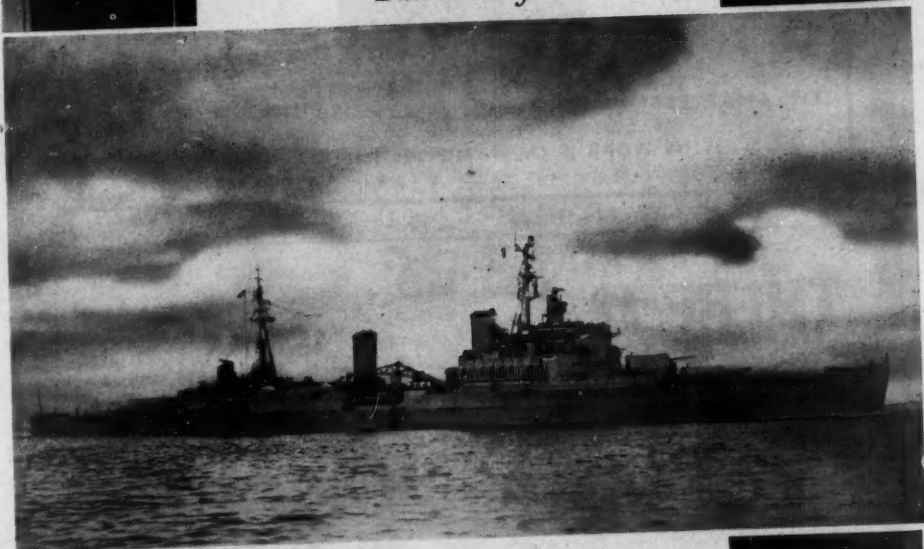
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# CONTENTS

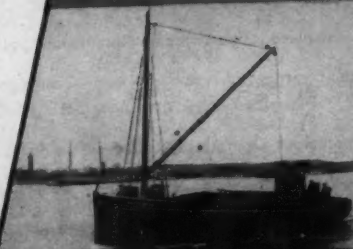
## NOVEMBER, 1946

	Page
Secretary's Notes ... ..	xix
Frontispiece : The Supreme Commander South-East Asia Command.	
The Strategy of the S.E. Asia Campaign (Lecture). By Admiral The Viscount Mountbatten, G.C.V.O., K.C.B., D.S.O., A.D.C. ... ..	469
Amphibious Operations (Lecture). By Brigadier A. H. Head, C.B.E., M.C., M.P. ... ..	485
Logistics of Operations in Europe. By Brigadier C. Ravenhill, O.B.E. ... ..	495
The German Air Force and Its Failure (Lecture). By Air Vice-Marshal Sir Thomas Elmhirst, K.B.E., C.B., A.F.C. ... ..	503
The Future of the R.N.V.R. By Captain T. D. Manning, V.D., R.N.V.R. ... ..	521
Recruiting for Infantry. By Brigadier A. H. G. Ricketts, D.S.O., O.B.E. ... ..	526
The Gibraltar Air Base ... ..	536
Plate I. The Gibraltar Air Base.	
Plate II. U.S.S. "Bennington."	
Victory in the Pacific (Lecture). By Admiral R. A. Spruance, U.S.N. ... ..	539
The British Commonwealth Occupation Force. By Lieut.-Colonel F. J. C. Piggott, D.S.O. ... ..	559
Coal in War. By Colonel W. R. Gordon, O.B.E. ... ..	561
Material Reserves. By Lieut.-Commander R. F. Colvile, D.S.C., R.N. ... ..	567
The Second Sedan. By Lieut.-Colonel Alfred Burne, D.S.O. ... ..	570
Mechanization, 1933-39. By Lieut.-General Sir Giffard Martel, K.C.B., K.B.E., D.S.O., M.C. ... ..	577
The Corps of Invalids. By Captain C. G. T. Deane ... ..	584
Atomic Bomb Tests ... ..	590
The International Situation ... ..	593
Correspondence ... ..	595
Reviews of Books ... ..	596
Additions to Library ... ..	599
General Service Notes ... ..	603
Army Notes ... ..	608
Navy Notes ... ..	618
Air Notes ... ..	627
Index ... ..	iii

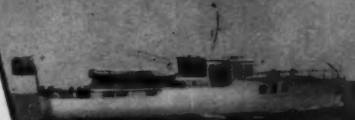
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Air Chief Marshal Sir Robert Brooke-Popham, G.C.V.O., K.C.B., C.M.G., D.S.O., A.F.C. has been elected a Vice-President to fill the vacancy caused by the institution of a second Vice-President representing the Royal Air Force, provided for in the amendment to the Bye-laws passed at the last Anniversary Meeting.

#### Ex-officio Member

Vice-Admiral Sir Patrick Brind, K.C.B., C.B.E. has accepted the invitation of the Council to become an Ex-officio Member on taking up the appointment of President of the Royal Naval College, Greenwich.

#### Resignation of Colonel B. Abel Smith, D.S.O., M.C., T.D., A.D.C.

The Council have received with much regret the resignation of Colonel B. Abel Smith owing to ill-health. Colonel Abel Smith had been Chairman of the Finance Committee since April, 1930. He has been succeeded in that capacity by Brigadier J. A. Longmore, C.B.E., T.D., D.L.

### NEW MEMBERS

#### Honorary Life Member

In recognition of his signal service to the Institution in coming specially from the United States to deliver his lecture on "The Victory in the Pacific," the Council offered to Admiral R. A. Spruance, U.S.N., President of the U.S. Naval War College, and he has accepted, honorary membership for life.

The following officers joined the Institution during the period 22nd July to 15th November, 1946:—

#### ROYAL NAVY

Captain Lord Ashbourne, D.S.O., R.N.  
Lieutenant-Commander Raymond Hart, D.S.C., R.N.  
Lieutenant (A) G. H. F. Poole-Warren, R.N.V.R.  
Midshipman P. J. Warburton-Lee, R.N.  
Lieutenant-Commander J. Smallwood, R.N.  
Vice-Admiral Alister F. Beal, C.B., C.M.G.  
Lieutenant D. A. Loram, R.N.  
Lieutenant (S) I. P. Goodwin, R.N.  
Lieutenant-Commander (S) M. C. M. Jephson, R.N.  
Captain H. P. Currey, O.B.E., R.N.  
Commander R. M. Aubrey, D.S.C., R.N.  
Commander M. Le Fanu, D.S.C., R.N.  
Lieutenant-Commander G. H. Evans, R.N.  
Lieutenant R. B. Michell, D.S.C., R.N.  
Captain H. Pitcairn Henderson, R.N.  
Commander H. W. Falcon-Steward, R.N.  
Commander G. A. L. Woods, D.S.C., R.N.  
Captain A. H. Hillgarth, C.M.G., O.B.E., R.N.  
Lieutenant-Commander A. F. Paterson, R.N.  
Commander I. G. Robertson, D.S.C., R.N.  
Commander G. R. Carver, R.N.  
Lieutenant-Commander I. M. Balfour, M.B.E., R.N.  
Lieutenant P. E. Durham, D.S.C., R.N.  
Captain F. B. Lloyd, O.B.E., R.N.  
Commander John Roe, D.S.O., O.B.E.  
Captain P. V. McLaughlin, D.S.O., R.N.  
Commander (S) W. S. Cox, R.N.

## ARMY

Lieutenant I. S. Gibb, The Seaforth Highlanders.  
 Major R. L. H. Webb, 2/7th Gurkha Rifles, I.A.  
 Lieutenant W. Allan Spowers, Grenadier Guards.  
 Major S. L. Menezes, Indian Grenadiers, I.A.  
 Captain B. H. Hobson, The York and Lancaster Regiment.  
 Major A. P. H. B. Fowle, Royal Artillery.  
 Brigadier F. G. Clark, C.B.E., Royal Artillery.  
 Lieut.-Colonel R. G. Wingfield, R.E.M.E.  
 Major John Constant, Royal Engineers.  
 Major T. A. Podesta, R.A.S.C.  
 Lieut.-Colonel L. S. Thomas, Royal Corps of Signals.  
 Captain H. L. K. Jones, The Dorsetshire Regiment.  
 Captain D. J. Hallam, R.E.M.E.  
 Major-General J. B. Churcher, D.S.O., K.S.L.I.  
 Lieut.-Colonel J. Sorel Cameron, D.S.O., The Q.O. Cameron Highlanders.  
 Major J. M. Howson, 6th D.C.O. Lancers, I.A.  
 Captain Peter Bailey, The South Lancashire Regiment.  
 Lieutenant R. J. Gresty, The Devonshire Regiment.  
 Lieut.-Colonel H. V. Fraser, R.A.C.  
 Lieutenant (QM) Harold Stokes, Royal Artillery.  
 Major S. A. Bulbeck, 9th Gurkha Rifles, I.A.  
 Lieut.-Colonel E. G. R. V. Bramble, Royal Indian Engineers.  
 Major D. H. Foskett, The Queen's Royal Regiment.  
 Major N. N. Fraser, The Argyll and Sutherland Highlanders.  
 Lieut.-Colonel E. Lewis, I.E.M.E.  
 Major J. S. Humphrey, M.B.E., Royal Artillery.  
 Major A. C. A. MacKinnon, The Cameronians (Scottish Rifles).  
 Lieutenant D. M. G. Pilleau, Royal Artillery.  
 Major L. MacL. Young, M.B.E., M.C., Royal Engineers.  
 Lieut.-Colonel C. J. B. Leahey, R.I.A.S.C.  
 Lieut.-Colonel W. G. Cass, Intelligence Corps (T.A.R.O.).  
 Captain C. R. J. Chisnall, R.E.M.E.  
 Major M. H. Pockson, D.S.O., 5th Royal Gurkha Rifles (FF), I.A.  
 Lieutenant B. Mitchell, 4/9th Gurkha Rifles, I.A.  
 Major K. W. L. Roberts, M.B.E., Royal Artillery.  
 Lieut.-Colonel J. B. M. Sloane, The Argyll and Sutherland Highlanders,  
 Comdg. 1st Bn. The Royal Scots.  
 Major A. J. Du Sautoy, The Royal Scots Fusiliers.  
 Captain I. J. Cowan, 4/9th Gurkha Rifles, I.A.  
 Major C. W. Cumber, T.A.R.O.  
 Captain V. L. F. Davin, 3/14th Punjab Regiment, I.A.  
 Lieutenant K. A. Bennett, 1st Royal Gloucestershire Hussars.  
 Captain Azmat Bakhsh Awan, Royal Indian Artillery, I.A.  
 Captain Shiv N. Bhatia, Royal Indian Artillery, I.A.  
 Major G. H. Hart, R.A.S.C.  
 Captain G. W. Partridge, The Essex Regiment.  
 Lieut.-Colonel G. P. Day, The York and Lancaster Regiment.  
 Lieut.-Colonel P. A. Leir, I.A.O.C.  
 Lieutenant R. T. Clarke, The Royal Fusiliers, att. Madras Regiment.  
 Captain M. J. Dickson, The Royal Ulster Rifles.  
 Major J. N. R. Hallett, The Royal Norfolk Regiment.  
 Major R. G. Hogg, The Cameronians (Scottish Rifles).  
 Major H. M. Prentice, 13th Frontier Force Rifles, I.A.  
 Captain K. D. Gribbin, Royal Corps of Signals.



Captain G. H. Hoerder, Royal Corps of Signals.  
 Lieut.-Colonel V. J. F. Popham, The South Wales Borderers.  
 Captain Douglas Fletcher, R.E.M.E.  
 Lieut.-Colonel F. R. Neep, 2nd Royal Bn. The Sikh Regiment, I.A.  
 Major P. G. Downe, The Frontier Force Rifles, I.A.  
 Major J. G. Lowery, R.A.S.C.  
 Major John Tanner, The Duke of Cornwall's Light Infantry, att. The Sikh Regiment, I.A.  
 Colonel D. A. Brett, G.C., O.B.E., M.C., The Jat Regiment.  
 Lieut.-Colonel C. C. Saunders O'Mahony, O.B.E.  
 Major J. C. Balharrie, M.C., Royal Tank Regiment.  
 Captain F. J. Burnaby-Atkins, The Black Watch.  
 Major B. B. Hart, 1st Cdn. Para. Bn., R.C.A.  
 Major P. H. Henson, R.A.S.C.  
 Lieut.-Colonel F. J. C. Piggott, D.S.O., The Queen's Royal Regiment.  
 Major W. G. A. Lambe, Royal Canadian Dragoons.  
 Major R. H. Whitworth, M.B.E., Grenadier Guards.  
 Major H. E. O. Graham, The Sikh Regiment, I.A.  
 Lieut.-Colonel J. M. Kerr, Royal Artillery.  
 Brigadier-General R. G. Shuter, D.S.O.  
 Lieut.-Colonel D. J. B. Houchin, D.S.O., M.C., The Northamptonshire Regiment.  
 Major David Pinkerton, The Royal Scots.  
 Lieut.-Colonel Martin Lindsay, D.S.O., M.P., late The Royal Scots Fusiliers.  
 Major J. T. Robinson, M.C., Royal Artillery.  
 Major J. W. Hill, R.E.M.E.  
 Captain C. G. Burke, The Worcestershire Regiment.  
 Colonel Alistair Drummond, 12th Frontier Force Regiment, I.A.  
 Major B. H. Tinton, The Essex Regiment.  
 Captain D. M. B. Stroude, The South Staffordshire Regiment.  
 Colonel F. P. L. Gray, D.S.O., O.B.E., late Royal Signals.  
 Major D. A. H. Russell, The Royal Berkshire Regiment.  
 Captain M. R. Kohli, I.A.  
 Captain P. S. W. Dean, The Suffolk Regiment.  
 Captain C. G. Wissett-Warner, The Hampshire Regiment.  
 Lieut.-Colonel W. G. Lyon, Royal Artillery.  
 Captain J. N. Burrell, Royal Corps of Signals.  
 Major J. W. Hawes, late Royal Garrison Artillery.  
 Major R. O. Skeggs, late The Rifle Brigade.  
 Major George Wort, The Wiltshire Regiment.  
 Captain John Brough, D.S.O., M.C., The Border Regiment.  
 Captain D. E. Thornton, The Welch Regiment.  
 Major T. R. Birkett, The Royal Northumberland Fusiliers.  
 Lieutenant G. W. Crook, 10/6th Rajputana Rifles, I.A.  
 Lieut.-Colonel R. K. Jago, M.M., T.D., 3rd City of London Yeo. (T.A.).  
 Major J. Malcolm Justice, The Rajputana Rifles, I.A.  
 Major D. R. Knox, The Rajputana Rifles, I.A.  
 Major I. B. St. R. Surita, M.C., The Rajputana Rifles, I.A.  
 Captain R. M. Giles, The Sikh Regiment, I.A.  
 Lieut.-Colonel P. T. Tower, D.S.O., M.B.E., Royal Artillery.  
 Major T. W. Gracey, Royal Artillery.  
 Captain R. F. Morgan, The Royal Ulster Rifles.  
 Major A. R. Sternberg, The Cheshire Regiment.  
 The Rev. L. F. Geddes, Chaplain, I.A.  
 Captain G. R. W. Howell, Royal Artillery.  
 2nd Lieutenant J. B. Evans, R.A.C. (The Royal Dragoons).

Major E. H. Cox, M.C., Royal Artillery.

Lieut.-Colonel J. A. J. Read, D.S.O., M.C., The Oxfordshire and Buckinghamshire Light Infantry.

#### ROYAL AIR FORCE

Squadron Leader W. A. J. Iles, R.A.F.

Wing Commander C. A. Masterman, O.B.E., D.F.C., R.A.F.

Wing Commander H. F. O'Neill, D.F.C., R.A.F.

Air Commodore L. L. MacLean.

Squadron Leader B. Everton-Jones, R.A.F.

Flight Lieutenant A. E. Game, R.A.F.

Squadron Leader F. B. Moss, R.A.F.

Wing Commander F. P. R. Dunworth, R.A.F.O.

Squadron Leader A. C. Featherstone, R.A.F.V.R.

Wing Commander W. M. Bisdee, R.A.F.

Squadron Officer R. R. Johnson, W.A.A.F.

Squadron Leader E. H. Bruce-Clayton, R.A.F.

Wing Commander B. A. Chacksfield, O.B.E., R.A.F.

Group Captain H. H. Hilliar, C.B.E., R.A.F.

Wing Commander R. Whitaker, M.B.E., R.A.F.

Squadron Leader M. D. Lyne, A.F.C., R.A.F.

Flight Lieutenant P. H. Macdowell, R.A.F.

Air Vice-Marshal T. A. Warne-Browne, C.B.E., D.S.C.

Air Commodore N. L. Desoer, C.B.E.

Wing Commander B. G. S. Burleigh, M.B.E., R.A.F.

Wing Commander L. A. Jackson, C.B.E., R.A.F.

Squadron Leader W. F. M. McDonagh, R.A.F.

Flight Lieutenant A. McM. Wilson, R.A.F.

Air Vice-Marshal S. F. Vincent, C.B., D.F.C., A.F.C.

Group Captain R. B. Harrison, R.A.F.

Squadron Leader A. M. G. Lywood, D.F.C., R.A.F.

Group Captain R. A. C. Carter, D.S.O., D.F.C., R.A.F.

Flight Lieutenant H. J. MacDonald, R.A.F.

Wing Commander J. B. Taylor, R.A.F.

Group Captain T. M. Abraham, C.B.E., D.F.C., R.A.F.

Air Commodore G. S. Hodson, C.B., C.B.E., A.F.C.

Group Captain N. C. S. Rutter, C.B.E., R.A.F.

Air Commodore T. N. McEvoy, C.B.E.

Squadron Leader D. H. Grundy, R.A.F.

Group Captain L. W. C. Bower, D.S.O., D.F.C., R.A.F.

Group Captain G. T. Jarman, D.S.O., D.F.C., R.A.F.

Wing Commander J. W. Louw, O.B.E., D.F.C., R.A.F.

Wing Commander B. Allen, R.A.F.

Wing Commander G. E. Shirley, R.A.F.

Group Captain E. R. Wood, R.A.F.

Squadron Leader R. H. Fry, D.F.C., R.A.F.

Wing Commander John Thompson, R.A.F.

#### COVENANTED SUBSCRIPTIONS

The Council hope that many more Members will support the scheme for Covenanted Subscriptions, details of which have been circulated to all Members.

This materially assists the Institution because it enables Income Tax at the full current rate to be reclaimed on each subscription.

To date, 570 Annual and 124 Life Members have signed the necessary Deeds.

Any Member who has not received his copy of the Scheme or who requires new forms is requested to communicate with the Secretary.

# LIAISON OFFICERS

The following alterations to the list of Liaison Officers published in the February, 1946 JOURNAL as amended in the JOURNALS for May and August, 1946, have taken place :—

## ARMY

Lieut.-Colonel R.E. Osborne Smith, D.S.O. ... B.A.O.R.  
Major T. A. Gore-Browne ... London District.

## AIR FORCE

Group Captain H. R. A. Edwards, D.F.C., A.F.C. Coastal Command.  
Group Captain E. J. Corbally ... Air Command South-East Asia.

## TRENCH GASCOIGNE PRIZE ESSAY COMPETITION, 1946

The following essays have been received :—

- "Audacter et Strenuae."
- "The price of liberty is eternal vigilance."
- "In Unity is freedom, in preparedness is safety."
- "Some therefore cried one thing, and some another :  
for the assembly was confused ; and the more part knew not wherefore  
they were come together."
- "Torovie."
- "Well-armed is he that hath his quarrel just  
But thrice armed he that gets his blow in fust."
- "Dum Spiro Spero."
- "Speak softly, but carry a big stick."
- "Unison."
- "We will maintain."
- "In uno virtus."
- "Tria juncta in uno."
- "Qui Patitur Vincit."
- "United we stand."
- "Alterius altera poscit opem."
- "Unity is strength."
- "What boots it at one gate to make defence,  
And at another to let in the foe ?"
- "Festina Lente."
- "Omega."
- "It is better to travel in anticipation than to arrive."

## JOURNAL

Members are invited to offer suitable contributions for the JOURNAL. Confidential matter cannot be used, but there is ample scope for professional articles which contain useful lessons of the War ; also contributions of a general Service Character, such as Strategic Principles, Command and Leadership, Morale, Staff Work, Naval, Military and Air Force history, customs and traditions.

The Editor is authorized to receive articles from serving officers, and if found suitable, to obtain permission for their publication from the appropriate Service Department. Army officers are reminded that such articles must be accompanied by the written approval of the author's Commanding Officer.

## Naval Officers' Addresses

Naval Officers are strongly advised to keep the Insitution informed of their address as JOURNALS sent to them via C.W. Branch of the Admiralty are invariably greatly delayed.

**Request for Back Numbers**

The Editor will be grateful for any copies of the JOURNAL for February, 1939, August, 1942, August, 1943, February, May and August, 1946, which Members may have finished with, in order to meet applications for these numbers.

**LECTURES**

For the convenience of Members, the list of lectures arranged for 1947 is published as a separate loose-leaf notice inserted in this JOURNAL.

**MUSEUM****RE-OPENING OF THE BANQUETING HALL.**

Except for the South end, which has been screened off for work on a section of the Rubens ceiling, the Banqueting Hall section of the Museum has now been re-opened.

The models of Trafalgar and Waterloo have been restored, most of the sailing ship models replaced, show cases with uniforms, headdresses, personal relics of great commanders and mementoes of famous battles re-arranged.

Colours, ensigns, guidons, standards and flags have been thinned out and regrouped. The Wolseley Room is closed for repairs.

The modern exhibits and the complete series of military dioramas are now showing in the Crypt which has been largely re-organized and re-arranged since the War.

**War Relics.**—Members and others interested in the R.U.S. Museum are requested to keep a look out for war relics. Considerations of space preclude the acceptance of anything except small articles of particular historic interest. Personal relics of special distinction will be very acceptable.

**ADDITIONS****GIFTS**

Vice-Admiral's Flag flown by Sir Bertram Ramsay, K.C.B., M.V.O. when Flag Officer Commanding Dover, 1939-42. Given by Lady Ramsay.

Autograph letter of Lord Nelson dated H.M.S. "Victory," 26th April, 1805. Given by Major the Lord Seaton.

Model of the British ship "Gloire," 1806. Given by the family of the late Captain Ralph Kerr, R.N.

Watch and Station Bill which belonged to Captain Robert McClure, R.N. when in command of H.M.S. "Investigator" which went in search of the Franklin Expedition, 1850. Given by Robert McClure Byron.

Uniform of Vice-Admiral Sir Robert McClure.

Given by Mrs. C. A. I. Cotton.

Steering wheel from the emergency conning position of H.M.S. "Warspite," 1913-46. Given by the Admiralty.

15-in. Tampion from H.M.S. "Warspite," 1913-1946. Given by the Admiral Superintendent, Portsmouth Dockyard.

Dress Swords of the German Army and Navy, 1945. Given by the Secretary of State for War.

Models of the German Ships "Prinz Eugen," "Admiral Hipper" and "Grille" (Hitler's Yacht). Given by Captain A. H. Alexander, O.B.E., R.N.

Model of a German U-Boat Type XXI, 1944. Given by Captain P. W. Brock, R.N.

Flag of a German Gross-Admiral said to have been flown by Admiral Raeder. Given by Captain E. R. Conder, D.S.C., R.N.

Stone Replica of the George Cross presented to Malta. Given by the Commander, H.M.S. "Sussex," 1945.

Water-line models of the German battle cruiser "Nuremburg" and "Admiral Hipper." Given by Captain E. R. Conder, D.S.C., R.N.

A collection of Japanese arms captured in the South-East Asia Campaign. Given by the Officer Commanding Field Test Centre, H.M. Gun Wharf, Chatham.



Seven Oil Paintings by W. B. E. Rankin, R.I. of N.C.O's. and Men of the Household Brigade, period 1913, and two of sailors of the Royal Navy, of the same period. Given by Mrs. Thesiger.

Uniform of Major-General C. Wahab, H.E.I.C., period 1850. Given by Lieut.-Colonel C. E. Wauchope, M.C.

Miniature portrait of General Sir Douglas (afterwards Field Marshal the Earl) Haig, K.T., K.C.B., O.M., K.C.I.E., K.C.V.O., A.D.C. Given by the Secretary of State for War.

Royal Air Force Flag flown at Malta during the years when it was besieged during the 1939-45 War. Given by Marshal of the Royal Air Force, Lord Tedder, G.C.B.

Japanese Officer's sword surrendered at Singapore in September 1945, and Flag of the Supreme Allied Commander, South East Asia, flown at his Headquarters in Kandy, Ceylon, and Singapore. Given by Admiral the Viscount Mountbatten, G.C.V.O., K.C.B., D.S.O., A.D.C.

#### LOANS

Sword presented to General Max Mohr by the Reichsminister of the Luftwaffe Herman Goering. Lent by Mr. George Jeger, M.P.

English Rapier, period 1600. Lent by the Victoria and Albert Museum.

Framed autographed letters from Lord Nelson and Lady Hamilton to Captain Sir Benjamin Hallowell, H.M.S. "Swiftsure," 27th June, 1800. Lent by Commander A. F. Ingfield, R.N.

#### EXHIBITS FOR SALE

The Museum Committee in the course of reviewing the contents of the Museum in order to make room for new acquisitions, have decided, with the approval of the Council, that certain articles which have become redundant or are duplicates shall be disposed of.

In cases where these might be of interest to Regimental Museums they are being offered on long loan. Other items of less value or lacking military association will be sold. Members who may be interested in their acquisition are invited to send inquiries to the Curator with their offers. The articles enumerated below can be inspected on application to the Curator:—

- 192 Lock from Gate of Powanghur Fort.
- 213 )
- 2097 )
- 2098 )
- 2099 ) Russian Eikons.
- 2100 )
- 2343 )
- 630 Engraving "Like coachman like cause."
- 854 Four Dollar Bills used by the Southern Army in American Civil War.
- 1497 Indian Juggler's Sword.
- 2637 Two Russian percussion Muskets from Crimea (with bayonets).
- 6775 Two Chinese Mortars (ancient).
- 6789 Chinese trench Mortar. Boxer Rebellion relic.
- 7332 Two gilded stone images of Buddha.
- 7336 Marble statue of a Nymph with dog.
- 8708 Several Indian Tulwars and an Indian dagger.
- 9069 Pair of carved horns from South Africa.
- 506 Model of a Baltic schooner made by a Russian prisoner of war from tortoiseshell and ivory.



*S.E.A.C. Photo. Unit*

**ADMIRAL LORD LOUIS MOUNTBATTEN, G.C.V.O., K.C.B.,  
D.S.O., A.D.C.,  
SUPREME ALLIED COMMANDER, SOUTH-EAST ASIA  
AND  
LIEUT.-GENERAL RAYMOND A. WHEELER, U.S. ARMY  
DEPUTY SUPREME ALLIED COMMANDER AFTER NOVEMBER, 1944**

# **THE JOURNAL** *of the* **Royal United Service Institution**

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[Authors alone are responsible for the contents of their respective Papers.  
All communications, except those for perusal by the Editor only, should  
be addressed to the Secretary, Royal United Service Institution.]

## **THE STRATEGY OF THE SOUTH-EAST ASIA CAMPAIGN**

By ADMIRAL THE VISCOUNT MOUNTBATTEN OF BURMA, G.C.V.O.,  
K.C.B., D.S.O., A.D.C.

On Wednesday, 9th October, 1946

FIELD-MARSHAL THE VISCOUNT ALANBROOKE, G.C.B., O.M., D.S.O.,  
in the Chair

THE CHAIRMAN: Admiral Lord Louis Mountbatten needs no introduction, and I  
will ask him to go straight ahead with his lecture.

### **LECTURE**

**I**N May, 1943, the situation in South-East Asia was not encouraging. The Japanese were in firm possession of the whole perimeter from Northern Burma to New Guinea, through Malaya and the Netherlands East Indies. Their forces dominated the Bay of Bengal. Our forces were clinging precariously to the North-Eastern approaches to India, with lines of communication that were barely adequate for purposes of defence, let alone for attack.

The command situation was equally unsatisfactory. The British land and air forces in Burma were at this time one of the many responsibilities of the Commander-in-Chief in India—Field-Marshal Wavell. The Chinese Army in India was under the American General, Stilwell, who also commanded the American land and air forces in China, Burma and India, thus extending his responsibilities across theatre boundaries. The Eastern Fleet was controlled, through its Commander-in-Chief, solely by the Admiralty. The Fleet headquarters were in a different continent—at Kilindini in East Africa.

At this juncture the Prime Minister and President Roosevelt met in Washington with the Combined Chiefs of Staff, and they decided that the first step to put the theatre on a proper footing was to create a unified supreme allied command. The Supreme Allied Commander was to have direct command of all forces of all Services of all nations, except that the Admiralty would retain direct control of the Fleet for the protection of trade and for offensive action against enemy warships only.

### **APPOINTMENT OF A SUPREME COMMANDER**

It was not until the Quebec Conference in August that agreement was reached between the British and the American authorities on who was to be the Supreme

**A**

Allied Commander. It was a well-kept secret, and I was quite shattered when the job was offered to me as I was still three years from the top of the Captains' List. The Prime Minister gave me twenty-four hours to think it over. During this time I saw the President and each of the British and American Chiefs of Staff separately to ascertain the degree of support I could expect from each of them. The question I asked was whether they would authorize me to dispense with the services of their Commander-in-Chief if I considered this essential. It was not that I had any intention or desire to remove any senior officer, but that I felt it was the acid test to see how absolute my authority was to be. All of them gave me the necessary assurance in the most generous terms, and I never failed to have the greatest personal support from them.

Our Chairman to-day, who was then C.I.G.S., kindly offered me the services of General Lindsell to be the new Allied Principal Administrative Officer on my staff. It was obviously going to be a vital appointment and I, knowing General Lindsell's high reputation in the Middle East, gladly accepted. A few minutes later the Chief of Staff of the U.S. Army—General Marshall—said he had just the man for the job and offered me the services of General Wheeler, who was commanding the American Services of Supply in the Far East and who had a very great reputation among his countrymen. Once more I accepted.

I had now accepted two men for the same post! On thinking things over, I decided to ask the C.I.G.S. if he would offer General Lindsell to Field-Marshal Auchinleck, provided that he created a Principal Administrative Officer's department in G.H.Q. (India), which did not at that time exist. The C.I.G.S. generously agreed, and the Commander-in-Chief (India) accepted the offer. I have no hesitation in saying that the simultaneous appointment of these two great administrators to the key administrative positions in India and South-East Asia made the whole difference to the smooth administrative running of the two Commands, for the Commands were in fact parallel and equal. The United States Chiefs of Staff at the Quebec Conference had asked that India Command might be placed under the command of the Supreme Allied Commander, but the British refused on the grounds that that was constitutionally impracticable.

On bidding farewell to Field-Marshal Auchinleck in June, he and I discussed the set-up between our Commands. We both agreed that the system whereby the reserves and base area were not under the operational commander would not have worked unless the two commanders concerned worked together as real friends. It was fortunate indeed that Field-Marshal Auchinleck honoured me with his friendship, for as a result of this everything went very smoothly. India Command could not have done more for us if they had been under my orders. Indeed, I could not have ordered them to make some of the sacrifices which they voluntarily offered to help my operations.

The American Commanding General in China, Burma and India was that great character Lieut-General Joseph W. Stilwell, popularly known as "Vinegar Joe." In addition to commanding the American land and air forces in China, Burma and India, he was the Chief of Staff to the Supreme Commander of the China Theatre, Generalissimo Chiang-Kai-Shek. He was now to receive a third appointment as Deputy Supreme Allied Commander, South-East Asia. I wondered how he would solve the problem of filling three such high level posts, but he did so in his usual unexpected manner by filling none of them himself. He appointed deputies and asked to be allowed to do a fourth job which was much nearer his heart, namely, to



command the Northern Combat Area in Burma. I should like to pay tribute to him as a Corps Commander and, later, as the equivalent of an Army Commander in the field.<sup>1</sup>

I can remember that as I went to my room at Quebec after having been given the appointment I pulled out a sheet of blank paper and a pencil and sat down to enumerate the problems which confronted me. The first was the problem of staff. Here I had been ordered to follow General Eisenhower's admirable model in North Africa, except that I was to have three Commanders-in-Chiefs, one for each Service, whereas he himself commanded the land forces direct most of the time. I was also determined to have a thoroughly inter-Service inter-Allied integrated staff, which was to include senior officers of all three Services of both countries, under Lieut-General Sir Henry Pownall as Chief of Staff.

I decided to set up my staff initially in Combined Operations Headquarters, London, and to use a nucleus of my existing Combined Operations staff. But I want to go on record that I had no intention of taking a "circus" with me. All those who came were warned that they would be released within about a year for operational service; indeed, every member of my staff was allowed to change at least once during my two and three-quarter years in South-East Asia.

On the other side of my sheet of blank paper I noted down five factors of which I already knew from having been to Burma (though twenty years ago) and having studied the problems as a member of the Chiefs of Staff Committee. Although I only jotted down one word for each factor, I propose now to enlarge on those factors, partly in the light of subsequent knowledge.

#### FIVE FACTORS

1. *Morale.* For two years we had been continuously defeated on land, at sea and in the air. It would have been a miracle if the morale of our troops had not been seriously affected and if they had not begun to fear that there was some measure of truth in the Japanese propaganda that their forces were invincible. Indeed, the late commander of the Army in Burma kindly came to see me in London to warn me of the low state that morale had reached after all these defeats.

I made a note that I would go round talking to as many of the men myself as I could, and to invite senior officers to do likewise. I determined to start a daily S.E.A.C. paper for all forces, and to try to get some publicity recognition for the "Forgotten Front." I feel that I can pay no greater tribute to all the men in my Command than to say that they recovered their spirit and that it was this factor more than any other which brought about the defeat of the Japanese in Burma.

2. *Terrain.* As you are aware, the axis of Burma runs from the sea in the South to the Himalayas in the North. The great river Irrawaddy and its tributaries run throughout the length of this axis. Two railway lines and the principal roads run from South to North, so the obvious way in which to invade the country would be from the South, which is precisely what the Japanese had already done.

Any invasion from India would have to take place over mountain ranges, in places more than 9,000 feet high, covered with an almost impenetrable jungle through parts of which—in the "creeper country," the Hukawng Valley, for instance—it was impossible, even without enemy opposition, to advance more than two to two and a half miles in twenty-four hours.

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<sup>1</sup> General Stilwell's death was reported three days after this lecture was given—EDITOR.

India had built wonderful lines of communication to the North-West Frontier, where they had intended to have their war. On the North-East Frontier a metre-gauge railway, with ferries over the Brahmaputra, served the tea-gardens with a peacetime capacity of 600 tons per day. By great efforts this capacity had already been quadrupled, but I wanted it to be trebled again and this could only be done by putting the vital sections of this line under complete military control, using U.S. railway troops, since we had no British railway troops to spare. Even then that would not get us very far into Burma and I realized at Quebec that any forces that were to advance any distance into Burma would have to be supplied by air. For this purpose I asked the Chief of the U.S. Air Staff—General Arnold—to set me up a special air unit to supply General Wingate's men when they started operating behind the Japanese lines, and in particular to be able to evacuate wounded by means of helicopters, light aircraft, and "snatch-off" gliders. This he generously agreed to do and kindly christened it No. 1 Air Commando.

3. *Monsoon.* Even this terrible terrain might have been manageable but for the Monsoon. For five months in every year the Monsoon beats down on the jungle in a monthly rainfall ten times that of London. For five consecutive months men remain almost permanently soaked to the skin, their few possessions are permanently damp, and the roads they build are almost immediately washed away.

Flying conditions are truly terrifying. I know of no case of an aeroplane entering one of the dreaded cumulo-nimbus thunder clouds and coming out of it again. Aircraft which have ventured on their fringe and turned back before their wings were torn off have been dashed down 3,000 feet in 30 seconds between mountain ranges, with a visibility of ten feet. These great thunder clouds frequently extend from ground level to 30,000 feet, and therefore one cannot fly under or over them, but by day, if he has enough petrol, a pilot can try to fly round them. I say "if he has enough petrol" because our transport aircraft were generally working at extreme range and could not afford to make a big diversion. No successful forced landing in that impossible country could be hoped for, while to bale out involved a hazardous walk-out through the jungle, and in the case of the airmen who for five months supplied Wingate's forces behind the enemy lines it also involved the risk of capture, with all that that entailed at the hands of the Japanese.

Custom and local military opinion, both Allied and Japanese, had, until the end of 1943, regarded the South-West Monsoon as a close season for operations, but as this would have limited serious campaigning to six or seven months in the year, I laid it down from the very beginning that we would fight on as hard in the Monsoon as in the dry weather, and thus gain the advantage which would come to the side that fights on when the other is expecting both sides to stop.

4. *Disease.* More serious than the Monsoon, however, was the incidence of tropical disease. The jungles of Burma are infested with malarial mosquitoes, the scrub typhus mite and the bacteria and amoeba of dysentery. Between them these presented a more redoubtable enemy than the Japanese army itself. I therefore set up at once an inter-Service inter-Allied medical advisory division to help with research and to help to organize an offensive drive against disease to be waged by the medical services.

In 1943, for every man who was admitted to hospital with wounds there had been 120 who were casualties from these tropical diseases. By 1944, these 120 men had been reduced to twenty, although hospital admissions still reached between 14,000 and 15,000 per week in peak periods. By 1945 the rate had dropped to ten

men sick for every one battle casualty, and during the last six weeks of the War these ten had been reduced to six. The enemy had no medical advisory division and appears to have made no advances in medical research.

As our own troops became more and more immune from circumstances against which the Japanese had no remedy, I was determined to enlist disease as an additional weapon on our side and deliberately chose unhealthy areas in which to fight.

5. *Priority.* As I shall show later, the troops in South-East Asia overcame all obstacles—mountain ranges, the jungle, the Monsoon and the ravages of malaria; but perhaps the most disheartening factor with which the theatre had to contend, and one we were powerless to remedy, was that it continued to be the lowest on the priority list.

Having myself been a full member of the Chiefs of Staff Committee which in 1943 decided which requirements of world strategy were to be given priority, I was the last person who would have had a right to complain because the world shortage and the urgent need for building up resources in Europe and the Pacific left little to spare for my own theatre. Outward and visible signs of this became apparent to the troops. In the midst of the Burma campaign, for instance, the order was received to send back 5.5 in. ammunition to the European theatre at a time when it appeared to be the only real answer to the Japanese fox-hole.

#### NARRATIVE OF THE CAMPAIGN<sup>1</sup>

On 7th October I arrived in Delhi with five staff officers to set up my headquarters in the Far East. At this time the "order of battle" in the theatre was roughly as follows. We had some nine divisions in Burma, which included Indians, West Africans and Chinese, with more in reserve in India. The Japanese had four divisions, but after the announcement of the formation of S.E.A.C. they built those four up to eleven. We had 634 aircraft—two-thirds British and one-third American. The Japanese had 284 aircraft—45 per cent. of our strength, but we did not have command of the air. The main reason for that was that our Hurricanes were no match for the Zeros, and it was not until Spitfires arrived at the end of the year that we started to gain command of the air. We had five cruisers and one submarine flotilla in South-East Asia, but, fortunately for us, in February, 1944, the Japanese sent their battle fleet to Singapore, which helped on the build-up of our own. In fact by the end of January the fleet under Admiral Sir James Somerville had been increased by three battleships and two aircraft carriers, but no destroyers.

I went to Chungking to see the Generalissimo and he agreed to allow the Chinese Expeditionary Force to advance from the Yunnan in a synchronized attack provided I would carry out an amphibious landing in South-East Asia. He asked me to give him an assurance that I would do this, and I said I hoped to be able to give him such an assurance after having consulted the Chiefs of Staff.

On 16th November I took over the operational command from Field-Marshal Auchinleck, and in December I issued an order integrating the British and American air forces, which until then had been operating entirely separately, under Air Chief Marshal Sir Richard Pierce. Lieut-General George Stratemeyer became his second-in-command and the Allied Air Commander for Burma.

#### THE ORIGINAL PLAN

I went to the Cairo Conference in November, 1943, and laid before the President, the Prime Minister, the Generalissimo and the Combined Chiefs of Staff our plans

<sup>1</sup> See Map facing p. 484.

for the coming campaign in Burma. This was to consist of the following seven related operations :—

(1) We had an amphibious fleet which the Prime Minister wished us to use to invade North Sumatra, but we found we could not do it without additional resources. I was told to plan an amphibious operation within my existing capabilities. I therefore decided to assault Port Blair in the Andamans in order to break into the outer Japanese perimeter of advanced air and naval bases. From there we could go on to Rangoon or the Kra Isthmus and eventually to Singapore. This operation was to be carried out by 33 Corps with air support from the Naval Air Arm.

(2) The second operation was the advance of 15 Corps, supported by 224 Group, down the Arakan coast to the end of the Mayu peninsula ; then, when landing craft became available, they would seize Akyab.

(3) The third operation entailed 4 Corps, which was up at Imphal, advancing to cross the Chindwin, with air support from 221 Group.

(4) The fourth operation was for General Stilwell's Chinese Army and American Long Range Penetration Regiment, supported by the 10th U.S. Air Force, to advance down the Hukawng Valley to Mogaung and Myitkyina.

(5) The fifth operation was for the Chinese Expeditionary Force, supported by the 14th U.S. Air Force, to advance from Yunnan to Bhamo and Lashio.

(6) The sixth operation was for 50 Indian Parachute Brigade to drop on Indaw and seize the airfield, whereafter 26 Indian Division would be flown in.

(7) The seventh operation was to be carried out by General Wingate's Special Force—known as 3 Indian Division, which consisted of six brigades, each of eight columns and totalling the bayonet strength of two divisions. They were to be flown in or marched in, according to what facilities there were, supported by No. 1 Air Commando and the 3rd Tactical Air Force.

At the end of my dissertation, the C.I.G.S. leant over to the First Sea Lord and said " It's unusual having Admirals on land ! " to which the latter is reported to have replied " But not so unusual for the Generals to be at sea ! "

At Generalissimo Chiang-Kai-Shek's urgent insistence, the President and the Prime Minister gave him their assurance that there would be an amphibious operation (for I had omitted details of this operation in his presence). In return, he gave his consent to the Yunnan Force advancing and coming under my command on crossing the border.

One further problem concerned the question of command. The Generalissimo did not want Chinese troops to serve under anyone except myself and General Stilwell, and the latter, as Deputy S.A.C., was unwilling to serve under my Army Group C-in-C., General Sir George Giffard. We finally compromised, however, by an agreement made at the Plenary Session, whereby General Stilwell should be under the operational control of the 14 Army Commander, General Slim, until Kamaing was reached.

I came back to Delhi, leaving Major-General Wedemeyer, my American Deputy Chief of Staff, to hold a watching brief. The Combined Chiefs of Staff went to Teheran in December, 1943, and, whatever it was that they discussed with Stalin, when they came back I received an order to send back two-thirds of my landing ships and craft for operations in the Mediterranean. They pointed out that I would have enough resources left to carry out an amphibious operation.



I immediately planned for the British 2 Division to effect a landing on the Mayu Peninsula and to trap the Japanese 55 Division between it and 15 Corps, which I was convinced would please the Generalissimo as much as a larger amphibious operation outside Burma. Unfortunately for me, President Roosevelt (and I yield to none in my admiration for him) sent a telegram to Generalissimo Chiang-Kai-Shek apologising for having to withdraw so many of my landing craft but saying I would still carry out an amphibious operation, although on a reduced scale. The Generalissimo was very put out and telegraphed that as he considered we had broken faith he would not allow the Chinese Expeditionary Force from Yunnan to advance. If they were not to advance, I could not risk leaving 26 Indian Division unsupported at Indaw. So three of the operations—Andamans, Yunnan Force and Indaw—fell through. But far worse was to follow.

The Chiefs of Staff now sent a telegram saying that as the Generalissimo had cancelled the advance of the Yunnan Force there was no point in letting me keep any landing craft at all, and I was to send the remainder to the Mediterranean. So that finished that operation! Our laboriously constructed house of cards came tumbling down once the bottom card had been pulled out and I was virtually left with only two offensive operations—General Stilwell's advance in the Northern Combat Area and General Wingate's Long Range Penetration Force, which was being largely used in support of this advance.

#### THE REVISED STRATEGY

We now had to review our position as far as the strategy of the theatre was concerned. We came to the conclusion that the first task with regard to China was to help the 14th U.S. Air Force, which was doing such admirable work under Major-General Chennault in sinking Japanese shipping off the China coasts. To do this it would be necessary to improve the air route over the Himalayas (colloquially known as "over the Hump"). Secondly, we came to the conclusion that we should give the highest priority to building the very long and very strong airfields needed for the B.29 Super-Fortresses, 100 of which (known as the 20th U.S. Bomber Command) were expected to be operating shortly from my theatre. Thirdly—and from our point of view most important—I decided to adopt the suggestion put forward by Major-General Wedemeyer to push through to Singapore quickly and open a port on the China coast, where one Liberty ship could bring in at least as many supplies as could be taken by road into China in a month. We felt that if we went cautiously and confined our activities to seizing and constructing airfields in the Myitkyina area we should have enough land and air forces to spare for this operation, provided we could receive back our own landing ships and landing craft and provided the strength of our aircraft carriers could be built up.

I sent a Mission under General Wedemeyer first to London and then to Washington. Their proposals were well received in London, but the Prime Minister instructed them to confine their remarks in Washington solely to Burma and not to refer to amphibious strategy. General Stilwell opposed this new move and, as has recently been disclosed by his Public Relations Officer in America, he sent his own Mission to Washington without informing me. It arrived before our own Mission and of course had no similar restrictions placed upon it. This has sometimes been represented as a cleavage between British and American policy, but you will note that both policies were sponsored by American Generals. In any event, General Stilwell's Mission won the day and the American Chiefs of Staff recommended to

the British Chiefs of Staff that I should be ordered to clear the whole of Northern Burma and to push a pipeline through to China.

I had given General Wedemeyer a second duty to perform, which was to appeal to General Arnold to let me have the greatest possible number of additional transport aircraft, because at that time we had only 76, British and American. He was fortunately able to use the argument that the American Chiefs of Staff directive would in fact leave many of our troops in mid-Burma during the Monsoon without any proper surface lines of communication and that in fact their policy could only be carried out if they gave us adequate air transport. As a result, General Arnold promised to set up four special combat cargo groups, each of 100 C.47 Dakotas or of 80 C.46 Commandos (equivalent to 120 Dakotas), on condition that I could prove that I really needed those transport aircraft to carry out these operations. So the visit was not unfruitful.

Now let us consider the situation at the beginning of February, 1944. 15 Corps had been holding back to allow 2 Division to land behind the Japanese 55 Division on the Mayu Peninsula. When this operation was cancelled in January, I gave orders for the advance to start and General Giffard ordered them to push on to the Maungdaw-Buthidaung line.

#### THE JAPANESE OFFENSIVE

This advance had not been very long in progress when, on 4th February, the Japanese started an offensive of their own. They sent a force of some 7,000 or 8,000 up the Kalapanzin Valley, and then struck West and South, encircling 7 Indian Division. Meanwhile the remainder of the Japanese 55 Division made a frontal attack.

In the past, whenever the Allied lines of communication were cut the Japanese had found that our forces had immediately fallen back and fought a battle at the point where the communications were cut in order to re-establish them. If at this time the Japanese could cut our communications a second time nearer our bases, the Allies would fall back again. So a technique to force us to retreat had been evolved. General Giffard, General Slim and I were determined that this should cease. Our policy was that if troops were cut off they were to "stay put" and we would supply them by air.

Meanwhile, the Japanese were carrying out fighter sweeps with 50 to 60 fighters at a time over the Arakan front. We estimate that they lost up to 200 aircraft in this series of battles—the first serious blow to Japanese air power in South-East Asia. I got the U.S. Chiefs of Staff's permission to borrow a transport squadron off the "Hump" and our troops stood fast, supplied by air, and won the first victory in South-East Asia.

One would have thought that the Japanese would have learnt their lesson in the Arakan battles, but not a bit of it. They now repeated the same mistake on a much greater scale, for the Japanese 15, 31 and 33 Divisions proceeded to adopt the same technique against 4 Corps on the Imphal front a month later, on 8th March. At this time I was in the American hospital at Ledo with both eyes bandaged, as I had had an accident on General Stilwell's front. Fortunately, I had my flying wireless and cipher station (the "Mercury") with me at Ledo and was thus able to keep completely in touch with events. As soon as I could persuade the doctor to take the bandage off my eyes, I flew to Comilla and saw General Slim, the

Commander of 14 Army, and Air Marshal Baldwin, the Commander of the 3rd Tactical Air Force.

It was clear to us that we must move at least one division from the Arakan to the Imphal front at once, but to send it by road and rail would have been far too slow, and unfortunately we had no transport aircraft to spare to move them by air. In the case of the Arakan attack, I had obtained the permission of the U.S. Chiefs of Staff to borrow a squadron of transport aircraft from the "Hump," but on this occasion I could not afford to wait for permission and I gave orders on my own responsibility, although I had had orders from the President not to touch the "Hump" traffic without his permission. He, very generously, supported this action.

We also came to the conclusion that 33 Corps, which was now no longer needed for amphibious operations, should be sent as quickly as possible to support 4 Corps, and I immediately flew back to Delhi to confirm the necessary arrangements with General Giffard and Field-Marshal Auchinleck, which I was glad to find were already under investigation.

It now became clear that we were going to require air supply on an unprecedented scale. The whole of 4 Corps was now cut off in the Imphal Plain; the Manipur road was cut at Kohima in the North, and the Bishenpur trail in the South-West—the only other one—was also cut. 50,000 useless mouths were flown out in the aircraft which brought in the supplies. We worked out that we wanted at least 70 more transport aircraft, and I asked if these could be taken off the "Hump." This request was refused, although I was told that I could keep what I had already taken off the "Hump" until June and that the remainder would be sent to me as soon as possible from the Middle East and the United Kingdom. In the meantime, General Arnold informed me that the first combat cargo group of 100 Dakotas would arrive at the end of June. I put in an urgent demand for the second group to follow as quickly as possible, and this, too, was accepted.

My planners now worked on the basis of having all the 400 combat cargo aircraft before the end of the year, but before General Arnold would send the remaining 200 he required us to submit a firm plan for their use. Before we could do this, we heard that General McArthur had put in a bid for the last 200 and they had been allotted to him. I immediately appealed to General Arnold against this decision and he finally decided to split the difference and to give us each 100. Thus I finally received from him 300 transport aircraft instead of the 400 on which we were planning.

On 22nd June—that is some six weeks after the Monsoon had started—the Manipur road was opened and 33 and 4 Corps joined hands. Although the Monsoon was in full swing, my policy of fighting on, marching on and flying on throughout it was faithfully carried out. There were no more ardent exponents of this policy than Generals Slim and Stratemeyer, and there is no doubt that the last thing the Japanese expected was for us to advance in the Monsoon.

Let us turn now for a moment to General Stilwell's front. I had told him to advance to the Myitkyina-Mogaung area and he was now making good progress against the Japanese 18 Division (veterans of Singapore). He was receiving excellent air support from the 10th U.S. Air Force. I had given him the American Long Range Penetration Regiment, which General Marshall had given me to join General Wingate's forces. Wingate had trained them and Stilwell now used them for a remarkable forced march over the Naura-Hyket Pass of the Kumon Range. They

descended on Myitkyina airfield and took the Japanese completely by surprise on 17th May. Although the Monsoon had started, American engineers, Chinese reinforcements and British A.A. artillery, were immediately flown in. It was as disappointing to him as to me that it took him another 79 days to complete the capture of the town.

The American Long Range Penetration Regiment was known as "Merrill's Marauders," and perhaps I might mention in passing that on the eve of the operation one of them wrote to his wife in these terms:

"Darling, We're off soon. My pack is on my back, my gun is loaded and oiled and as I walk through the valley of death I fear no son of a bitch!"

At the end of April, 1944, the President, at General Stilwell's urgent request, sent a telegram to the Generalissimo and succeeded in persuading him to allow the Chinese Expeditionary Force to advance from the Yunnan.

On 16th June General Stilwell reached Kamaing and demanded that I should implement the Cairo agreement, by which he would now come under my direct command. This made me Commander-in-Chief of the Allied Land Forces and upset the tripod arrangement on which I wished to base my command, for I now found myself having to deal with purely Army problems, such as deciding boundaries between Corps and adjusting the rates of advance of neighbouring forces. I have no hesitation in saying that in a theatre where the land forces do not exceed the size of an Army Group it is the greatest mistake for the Supreme Allied Commander also to be the Commander of the land forces.

Meanwhile General Wingate's operation was taking place. 16 Brigade started their long and weary march in on foot on 5th February on the western flank of General Stilwell's advance. Four other brigades were flown in, two on 5th March and two on 22nd March. The sixth and last brigade was used to cut the Japanese communications behind Kohima at Ukhrul, under 33 Corps. General Wingate himself was unfortunately killed in a flying accident on 24th March, but his gallant forces carried on fighting behind the Japanese lines.

#### COMMAND OF THE SEA AND AIR

By the Summer of 1944 we had complete command of the sea and air throughout the theatre. Destroyers had arrived at the end of March, which had enabled the fleet sweeps to start. During April, American, Dutch and French ships had joined the Eastern Fleet. The policy at this time was to deny the Indian Ocean to the Japanese, cutting their sea communications and forcing attrition on the Andamans. At the same time, Naval Air Arm strikes and bombardments were to take place against their military and oil installations in the Netherlands East Indies, and they were to give the Army in Burma the maximum possible support. In May, 1944, they carried out their first long operation against the Sourabaya refinery, spending 22 days at sea.

Command of the air came to us chiefly through the arrival of Spitfires and long range fighters such as the P.47 Lightnings. Indeed this command of the air was a necessary prerequisite to being able to embark on really large scale air supply.

#### THE NEW DIRECTIVE

On 3rd June I received my new directive from the Chiefs of Staff. Paragraph 1 was identical with what I had suggested to them in April, namely, to develop, maintain, broaden and protect the air route over the "Hump" into China, but a



new paragraph was added which instructed me to press advantages against the enemy and to be prepared to exploit the development of overland communications with China. All these operations were, as usual, to be carried out with the forces I already had in the theatre. So far as I was concerned, this meant that we had to conquer most of Northern Burma, and really it meant that we should have to go on and liberate the whole of Burma because I did not feel it was militarily sound to remain poised in mid-Burma without any firm surface lines of communication, particularly during the Monsoon.

We therefore produced two plans, "Capital" and "Dracula." "Capital" was to be an advance by 14 Army, which now consisted only of 4 and 33 Corps, since 15 Corps had been put directly under 11 Army Group. They were to cross the Chindwin and deploy their armour against the enemy in the Ye-u/Shwebo area, with subsequent exploitation to Mandalay. Airborne troops were to seize Kalewa, whilst a second landing was to be made at the entrance to the Mandalay Plain. General Stilwell's N.C.A. Command and the Chinese Expeditionary Force were to undertake a complementary advance to the South.

"Dracula" was the recapture of the Rangoon area by a combined airborne and seaborne assault to cut the main Japanese lines of communication. If the enemy reacted strongly, our northern forces would be able to advance against reduced opposition, but if there was no strong reaction, the seaborne and airborne forces would be able to advance northwards in conjunction with other operations to open the road to China. For the latter operation, additional reserves would, of course, be required from the United Kingdom.

I went to London in August, 1944, and put these plans before the Prime Minister and the Chiefs of Staff. I received their fullest approval, but they pointed out that the additional resources for "Dracula" could only be made available if Hitler were defeated by October, as was at that time thought likely.

At this time the Prime Minister asked me my views on whether I could spare the modern part of the Eastern Fleet to go to the Pacific. He told me that if I required it in South-East Asia, he would support my retaining it. I took the view that the modern battleships, the Fleet carriers, the Fleet train and the necessary proportion of cruisers and destroyers could not only be spared by the Eastern Fleet but would, in my opinion, be better employed in the Pacific as soon as we could be sure that the Japanese Battle Fleet was moving from Singapore (a move which did not actually take place until October). I did, however, ask that I should be allowed to retain enough old battleships for bombardment, auxiliary carriers for air support and, of course, all our amphibious resources for South-East Asia. The new component of the Fleet was rechristened the British Pacific Fleet and left my theatre in January 1945, the remainder becoming the East Indies Fleet.

In November, 1944, there was a tremendous reshuffle in the higher appointments. The Generalissimo and General Stilwell parted company, the latter being given another appointment in the United States. This resulted in my excellent P.A.O.—General Wheeler—becoming my Deputy Supreme Allied Commander. General Sultan, who had been General Stilwell's Deputy Commander, now became Commander of the American Forces in India and Burma, and succeeded to the command of the Chinese armies in India and Burma. My Deputy Chief of Staff—General Wedemeyer, went to China to be the new Chief of Staff to Generalissimo Chiang-Kai-Shek and to be the Commanding General of the U.S. Forces in China. Meanwhile Lieut.-General Sir Oliver Leese arrived to take up the new appointment of

Commander-in-Chief Allied Land Forces, South-East Asia—11 Army Group Headquarters being taken over by him and expanded to include a small proportion of American staff officers.

When General Wedemeyer arrived in Chungking he discovered that over a period of five months the Japanese had advanced 500 miles from Yochow to Liuchow, and that having got to Liuchow they were threatening either the capital—Chungking, or the vital “Hump” terminal—Kunming, the fall of either of which would have been so disastrous as probably to throw China out of the War. General Wedemeyer immediately telegraphed to me asking me to send him two Chinese divisions, three combat cargo squadrons, two troop carrier squadrons of the Air Commandos and some heavy bombers. He repeated this demand simultaneously to the Combined Chiefs of Staff. Although the loss of these forces could not fail to have a very serious effect on my own operations, I realized that my own operations were in fact directed towards helping China and that they would all be in vain if China was forced out of the War. I therefore immediately agreed and gave orders for the moves to start. I must confess that I also hoped that by this quick display of generosity I might be spared further depredations!

The first effect of these moves was to cause the cancellation of the airborne part of “Capital.” The second effect was to slow up the whole of both 14 Army and N.C.A.C. for lack of aircraft. The third effect was to upset General Sultan’s military plans by the withdrawal of a large proportion of his land forces. However, it was not the first time that our theatre had had to suffer through lack of priority.

In the meanwhile, not only the Japanese in China but the Germans in Europe were interfering with our plans. Hitler had failed to stop fighting in October—an estimate on which our plans were based, and the result was that it was impossible to get the divisions we had been looking for from the United Kingdom. 6 Airborne Division, which had been held for us in England, was in fact sent into the European battle, and even the L.S.T.’s we had hoped for were delayed, as they were being used to ferry extra supplies across the Channel. The British-Indian divisions could not now be released from Italy and the whole of Operation “Dracula” had to be cancelled.

In order to have some troops for further amphibious operation it became imperative to release 15 Corps from the Arakan front. Another reason—which in fact was of even greater importance—was that we needed air bases farther to the South from which the air supplies of 14 Army could be kept up as they advanced to Rangoon. Our existing air bases were all in Assam, and as a Dakota can only fly 250 miles there and back with a useful load, it was essential to get airfields within this range of Rangoon. A glance at the map will show that Akyab and Kyaukpyu in Ramree Island fulfilled these requirements. We therefore pushed on with the operations to clear Arakan. This was with the approval of the Chiefs of Staff, though they told me I was not to plan further amphibious operations until I was quite certain that the situation was clear in Burma.

In January, 1945, the situation was that 14 Army were across the Chindwin and that 15 Corps had taken Akyab unopposed, since the garrison had come out battalion by battalion to try and stem the advance. At the end of January the road to China was opened, General Sultan’s forces meeting the Chinese 11 Army Group between Wanting and Namhkan. I was then able to report to the Combined Chiefs of Staff that the first part of my directive had been completed.

Meanwhile the Assam lines of communication had fortunately reached their

target and were in fact handling more than 7,500 tons per day. At the end of January, General Leese and General Stratemeyer had worked out that they could not do without the extra 100 aircraft which our original plan had allowed for. Air Marshal Joubert told me he required 40 aircraft for feeding the civil population. I informed the Chiefs of Staff of these requirements and said I was sending my new Chief of Staff, General Browning, by air to explain them. General Browning had relieved General Pownall when the latter was invalided at the end of 1945. I got the quickest reply I ever had out of the Chiefs of Staff, telling me that it was unnecessary to send General Browning home, but I considered the situation to be so desperate that I sent him home none the less. He had a friendly reception from the Chiefs of Staff, who undertook to let us have 145 transport aircraft—five more than we had asked for. In view of our low priority, this was indeed encouraging.

#### UNPRECEDENTED AIR SUPPLY

The aircraft started coming out to us, and we gradually built up the largest-scale air supply that has ever been seen. It was not just a question of auxiliary air supply, because 96 per cent. of our supplies to the 14 Army went by air. In the course of this campaign we lifted 615,000 tons of supplies to the armies, three-quarters of it by the U.S. Air Force and one-quarter by the Royal Air Force. 315,000 reinforcements were flown in, half by the British and half by the Americans. 110,000 casualties were flown out, three-quarters by the British and a quarter by the Americans. In our best month—March 1945, we actually lifted 94,300 tons. During that time the American Air Transport Command were building up their "Hump" traffic, so that by July they had reached their peak of 77,500 tons per month.

We had not really got the aircraft to do this, at all events on paper. In fact, we had only about half the aircraft that were really required, but we made up the other half by the expedient of flying almost double the number of hours allowed for sustained operations. Normally this would be considered an extremely dangerous policy, but we had no alternative. Weary aircrews turned round and flew again through the Monsoon, and weary maintenance crews, instead of going to sleep, switched on their lamps and started overhauling another aircraft. This went on day after day, week after week, and month after month. Although there was the gravest risk that the whole of the air transport arrangements might break down, they could see the results of their supplies in the daily advance towards Rangoon and their morale was so high that they somehow managed to carry on. Nevertheless I do not recommend that any plans should be made which entail aircraft working at over-sustained rates. I cannot pay too high a tribute to all the Allied air forces for their magnificent achievement, which I do not believe has been equalled in war.

On 3rd February, 1945, I got a new directive from the Chiefs of Staff, i.e., to liberate Burma at the earliest date and, subject to this, to liberate Malaya and open the Straits of Malacca. I was told to accomplish the liberation of Malaya with the forces at present at my disposal, though they hoped to despatch further reinforcements from the European theatre should the situation render this possible.

I examined a suggestion that we should go through the Sunda Straits, but had to reject this because the Fleet Train had gone to the Pacific and the East Indies Fleet could not operate so far from its base for any length of time. We decided that we could afford to by-pass the Andamans now that the Japanese air and sea power had dwindled, and to go right on to Phuket Island, where we could set up bases, as a stepping-stone towards Malaya. This was to be done in June and as the landing craft were beginning to come out we all felt very optimistic.

I should like to stress that my object in South-East Asia was always to recapture Singapore before the Japanese were forced to surrender. This object I kept constantly before my Commanders-in-Chief, and now that the War was beginning to speed up I was determined to get to Singapore before the end of 1945.

#### RECAPTURE OF MANDALAY

Let us review the general situation in Burma in March. 14 Army had now crossed the Irrawaddy. Incidentally, the Irrawaddy is five times as wide as the Rhine, and it must be remembered that we had none of the facilities for crossing rivers which the Armies in Europe had. The Prime Minister had been able to announce in the House that 14 Army had recaptured Mandalay, saying "Thank God they have got a place whose name we can pronounce!" 15 Corps had done a series of brilliant amphibious assaults on the Arakan coast, seizing in succession Akyab, Myebon, Ramree Island, Kangaw, Ru-ywa and Letpan. The Myebon assault was ordered and carried out within 72 hours, the planners having to plan standing up because there was no time for them to sit down! The Eastern Fleet, on their own, captured Cheduba with the Royal Marines. All the 15 Corps assaults had to be carried out through *chaungs*. These *chaungs* are inland waterways which the Navy had not charted. The only information available about them was that shown on military maps, and when one tries to navigate waters relying solely on military maps one realises what a grave risk the Navy was taking!

It was at this stage that it again became the turn of the Chinese to deal us our next routine blow. This time it was a serious threat of famine, and in order to relieve the famine the Generalissimo considered it necessary to reconquer vast areas of paddy fields to produce the necessary food. General Wedemeyer therefore asked me to send the American Mars Brigade (which had relieved Merrill's Marauders) and the remaining three Chinese divisions as well as all American air transport aircraft to China. I flew up and saw General Wedemeyer at Calcutta on his way to Washington, and then flew on to Chungking to see the Generalissimo. After a series of talks we eventually hammered out a plan which I could just manage without finally wrecking all prospects of 14 Army getting to Rangoon. I agreed to send back the American brigade to act as instructors to the Chinese and to pull out the other divisions as fast as the transport aircraft of the 14th U.S. Air Force could take them. The Mars Brigade were the only Americans we had fighting on land, and although they fought gallantly they required so much more air supply per man than a Chinese soldier that General Sultan agreed that they should be the first to be moved. I absolutely dug in my toes about releasing any further transport aircraft until we had reached Rangoon, which I prophesied would be by June.

#### THE OCCUPATION OF RANGOON

In May, 1945, owing to these various incursions into our resources, General Sultan's thrust had been once more held up and it looked as though General Slim was not going to get to Rangoon before the Monsoon. We therefore finally decided to sacrifice our amphibious operation against Phuket Island and to take Rangoon by a simultaneous airborne and seaborne operation. The operation was carried out at the last possible moment. The airborne attack was on 1st May, to seize the shore defences at the mouth of the Rangoon river, and "D" day for the seaborne assault was 2nd May. Believe it or not, as the first soldier put his foot on shore, down came the Monsoon—ten days earlier than usual.



My opposite number—the Supreme Commander of the Japanese Expeditionary Force of the Southern Regions, Field-Marshal Terauchi, had given strict orders that in no circumstances were the Japanese to vacate Rangoon; they were to stay and die defending it to the last man. General Kimura, however, took no notice of his Supreme Commander's orders and, fortunately for us, vacated Rangoon. On our side of the theatre, the Supreme Commander was obeyed better than that!

### THE JAPANESE SURRENDER

The serious consequence, of course, was that the operation to take Phuket Island (Operation "Roger") had to be postponed for six weeks. As the War was speeding up, I felt we could not afford a six weeks delay and I decided to take the risk of cancelling "Roger" and of going straight to Malaya. This invasion of Malaya was called Operation "Zipper." "D" day was to be 9th September, but on 15th August the Japanese surrendered at the precise moment when a quarter of a million men with their equipment were being loaded for "Zipper." We now know that "Zipper" could not have failed to have been a complete success, for the Japanese had only 130,000 (of their three-quarter million in South-East Asia) to oppose us in Malaya. They did not know when or where we were coming; all they knew was that their Intelligence had said we could not come during the Monsoon, that is not until November.

The Japanese themselves estimated that they lost over 190,000 dead in the Burma campaign. We only took some 3,000 prisoners of war. In case you think I have been shooting a bit of a line, I would like to quote one witness in conclusion—no less a person than General Kimura, the Japanese Commander of the Armies in Burma. In the third week of August he sent me a telegram—a very polite one. You have no idea how polite the Japanese had become!:

"I beg to inform your Excellency" . . .  
you see, he had even made me an Excellency by now!—

"that I have this day passed the order to cease fire to all the Japanese armies in Burma, with the exception of certain units.

If your Excellency can kindly inform me where the various outlying parts of my armies are, I will try and pass the order to them as well."

### DISCUSSION

A MEMBER: Did the Lecturer know that the atom bomb was going to be used?

THE LECTURER: That was, of course, a very great secret and I did not hear of it until I got to Potsdam at the end of July, when I was told in very great secrecy. This gave me time to telegraph to my Chief of Staff telling him to prepare plans for the Japanese to surrender in mid-August.

The atom bomb was, in my opinion, only an excuse to enable the Japanese Emperor to save his face in carrying out the surrender which had become inevitable. The Japanese were beaten in the Pacific and South-East Asia on land, at sea and in the air. Their shipping losses had become crippling. Their maintenance had run down completely and they would have brought themselves administratively to a standstill, quite apart from defeat in battle, if they had not surrendered.

AIR VICE-MARSHAL T. M. WILLIAMS: When Lord Louis arrived in South-East Asia as Supreme Commander it was my privilege to be Commanding the Royal Air Force and Indian Air Force formations operating on the Burma front. As you have heard, he flew to China to see the Generalissimo within a week of his arrival, but what he did not tell you, and what is characteristic of his energy, is that in the intervening period he spent two days and nights flying up and down the whole theatre, landing at all sorts of

outlandish and often difficult airstrips, giving pep talks to airmen and soldiers. Such talks were sorely needed, and did tremendous good to the morale of personnel who had just been through a very trying Monsoon period.

I think there were two outstanding lessons we learned from the Burma Campaign. The first was the pressing need for standardization. When every single man, and all the equipment of the Services at war, had to be carried by air, and literally every pound of weight counted, it was heartbreaking to find aircraft flying in different kinds of equipment to meet the varied needs of Air and Army formations. I know that to-day we are paying great attention to inter-Service standardization, and to standardization within the Services.

Another factor of paramount importance, most particularly in tactical forces, is the need for close integration of staffs. In our case everybody—American and British—shared Command and subordinate H.Q.'s, all the way down the line. American and British air squadrons shared airfields, air traffic control facilities, equipment, and even messes. I venture to suggest we attained a degree of integration unequalled in any other theatre, and in my opinion this was one of our biggest campaign-winning factors.

AIR VICE-MARSHAL S. F. VINCENT: I should like to confirm what has just been said with regard to co-operation. I had the honour of commanding 221 Group and of working with the 14th Army. We had a combined headquarters all the way down from Imphal to Rangoon, and there was complete co-operation between the ground and air forces all the time.

You have heard about the thousands of tons of supplies and reinforcements that were flown in, but not one of those tons of supplies could have been brought in if it had not been for the protection of fighter aircraft. Those fighter aircraft worked in exactly the same way as the supply aircraft—for twenty-four hours a day. We have a book published by the Air Force in which are set out figures of supply in war time to which one is expected to adhere. The figures are for petrol, oil, ammunition, bombs, etc., according to numbers of hours and sorties flown. There is an economical rate, known as the maximum sustained rate, and an emergency high pressure rate; the latter is one which can, according to the book, be kept up for two or three days only at a time. Every squadron in 221 Group exceeded that maximum on many days by as much as 100 per cent. and from 25 per cent. to 100 per cent. for six consecutive months, which was a tremendous effort.

I should like to confirm also the results of the Supreme Commander's talks to my airmen in particular. They used to stand there, stripped to the waist, in an entirely informal way, and he always managed to tell them something which really held their interest and which was not in the newspaper. As a result they all felt that they had had something personal from the Supreme Commander, and that they were going out to prove their faith in him—which they did.

#### THE CHAIRMAN

I am sure you will all agree with me that the Lecturer has given us a great deal of food for thought, and I would not like to put much more on your plate to-day.

I feel certain that I shall be expressing your desire and wishes if I thank the Lecturer on your behalf, and convey to him your deep gratitude for the excellent and most interesting lecture he has delivered. (*Applause.*)

A vote of thanks to the Chairman, proposed by Admiral Sir Charles Little, G.C.B., G.B.E., was carried with acclamation.

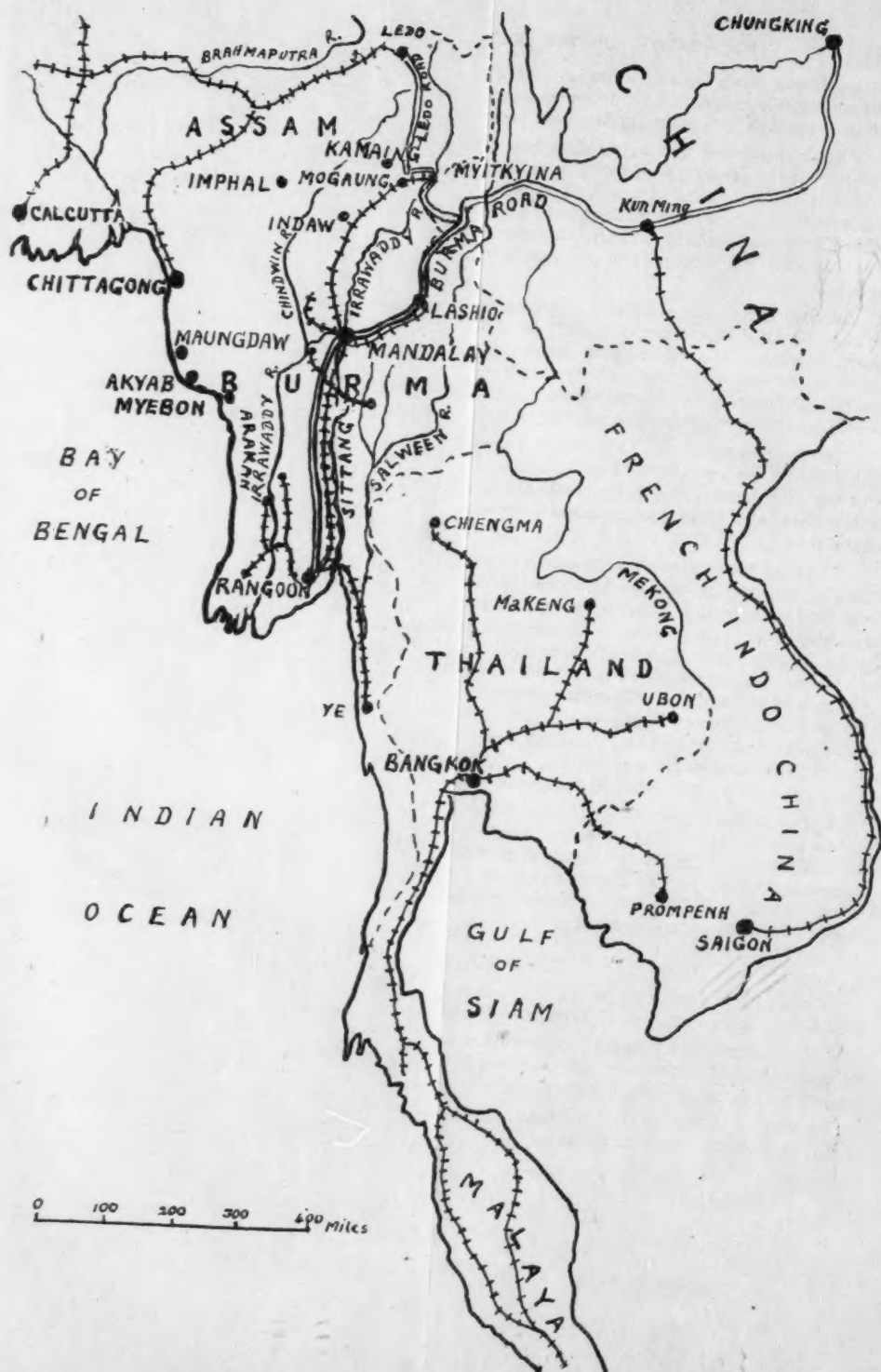
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## AMPHIBIOUS OPERATIONS

By BRIGADIER A. H. HEAD, C.B.E., M.C., M.P.

On Wednesday, 13th March, 1946.

VICE-ADMIRAL SIR RHODERICK R. MACGRIGOR, K.C.B., D.S.O., in the Chair.

The CHAIRMAN, on introducing the Lecturer, said that Brigadier Head joined the Staff of Combined Operations Headquarters in 1942 and served there until 1945. He was the representative of the Chief of Combined Operations on the Joint Planning Staff in the War Cabinet offices, and was an expert on the subject of amphibious operations.

### LECTURE

THE object of this lecture is to trace the evolution and progress of British technique in amphibious operations from its origin in about 1922 until the present time. I am afraid you may find it rather indigestible because I have little time to cover a subject which extends over a period of twenty-three years and includes twenty-five major amphibious operations.

An amphibious operation is only the preliminary phase of a land campaign, although many people tended to think that it was in itself an operation and a whole operation. It is the first phase of a land campaign by which you attempt to defeat the enemy's land forces. In planning this is so often forgotten, and the needs of the amphibious assault often do not take enough account of the necessity for so deploying the land forces as to give the best chance of winning the subsequent land battles.

For the purposes of this talk I have divided the period covered into four phases, namely (a) from 1922 to Dunkirk; (b) from Dunkirk to the Dieppe raid; (c) from the Dieppe raid to "Overlord"; and (d) from "Overlord" to the present day.

### BETWEEN THE WARS

During the sixteen years from 1922 to 1938 amphibious operations were studied solely by the Staff Colleges. I think their studies were on the academic side and at that time there was little or no special amphibious equipment. The assault was to go ashore from destroyers and cruisers in the ships' whalers and to be covered by ships' bombardment. In 1922 we had one jet-propelled Landing Craft Mechanized. This was increased between 1928 and 1930 to three jet-propelled L.C.M. Then, in 1935-36, came the Italo-Abyssinian war which had the effect of making the Treasury depart from custom and sanction the building of six more L.C.M. as a sort of protest against the war. It is interesting to note that during the Sino-Japanese war in 1937 the Japanese brought the equivalent of six Landing Ships Infantry (L.S.I.) and 400 minor landing craft to the Tientsin River. However, it is evident from the records of those days that most people in this country felt that the growing strength of air power had really made amphibious operations, at any rate in a European war, a very dubious venture.

In 1938 Sir Ronald Adam, who was at that time the D.C.I.G.S., succeeded in getting started a small inter-Service committee which was known as the Inter-Service Technical Developments Committee. The idea was that a full Colonel, a Commander R.N. and a Wing Commander R.A.F. should get together and study the whole question of inter-Service operations. The Navy suggested that it should be a naval establishment and in the end, the Navy having won the day, the Committee was run by a naval Captain, a Major and a Wing Commander. They set up

their headquarters and started to get things going, and it is interesting to note that, just after they commenced, an exercise took place under Rear-Admiral Collins, in which an infantry brigade was landed on the South coast of England. That brigade was commanded by Brigadier (now Field-Marshal) Montgomery. They landed but could not be re-embarked because the weather deteriorated and they had a most miserable night. I believe Brigadier Montgomery said it was valuable hardening training, but I do not think anybody learned very much about amphibious operations. The I.S.T.D.C. meanwhile got down to the design question and they produced a Landing Craft Assault which was similar to the modern L.C.A. and proved itself to be a very good landing craft. They earmarked a certain number of vessels as big L.S.I., but of course they were not allowed to modify them.

A number of papers were also written. It is only recently that I have discovered those papers, and certainly when I was with Admiral Mountbatten we did not know anything about them. Some of the titles of those papers, written in 1938, show how well they had got on with this job. The subjects dealt with included "Amphibious Tanks," "Clearance of Underwater Obstacles," "Supply and Maintenance of Army Troops from the Air," "Construction of Headquarters Ships for Amphibious Operations," "Floating Piers" and "Use of Small Punts from Submarines." Those papers were put up to the Deputy Chiefs of Staff Committee, but owing to lack of money nothing was done.

Then came Munich. Combined Operations, at that date, were apparently regarded as a very fancy affair and not related to the practical side of war, for the I.S.T.D.C. was immediately disbanded. After the war scare, however, it was re-constituted and continued with its work.

#### THE 1939-45 WAR

Then came the War. The functions and future of the I.S.T.D.C. seemed a little uncertain, and the officers concerned made the best of this uncertainty and departed: the Captain got a job with the Navy, the Wing Commander went off to the Air Force, but the War Office could not immediately find a job for the Major, so he remained. The position with regard to ships and craft at the outbreak of hostilities was as follows: 12 L.C.A.; 1 new L.C.M.; 10 old jet-propelled L.C.M.; and 1 L.C.S. (Landing Craft Support).

The first amphibious operation—although I doubt whether it merited the name—took place on the Runjbak fjord, near Narvik. The Navy bombarded what coast defences there were and a very small force landed in 4 L.C.A., 1 L.C.M. and 5 jet-propelled L.C.M. The result of the operation was that all the craft were lost and, furthermore, it really finished off the old I.S.T.D.C., for the sole remaining representative, who was acting as G.I. Ops., was badly injured when his aircraft crashed.

The next event was Dunkirk to which all the landing craft which then existed, namely nine L.C.A. and two L.C.M., were sent to help in the evacuation. They did wonderful work but were pretty well worn out by the end of it and, as a result, we ended up with practically nothing. We had a few over-worked L.C.A. and one L.C.M., and the Germans got the other. Some 48 L.C.A. and 30 L.C.M. had been on order for some time, but the Navy were desperately short of destroyers, minesweepers and other warships, which had to be given absolute priority for building, and no priority was given to landing ships and craft.



The first person to take the initiative during that dismal period was the late Prime Minister who, having appointed General Bourne as the first Director of Combined Operations, told him to state what craft he required to be built for carrying out offensive raids. General Bourne asked for 93 L.C.A., 106 L.C.M., 25 L.C.T. and 4 L.S.I. The request for L.C.T. (Landing Craft Tank) was doubtless stimulated by the fact that the tank was then the undisputed queen of the battlefield and so, for the first time, L.C.T. progressed from the drawing board to the order stage.

The next period was also one of great difficulties because Admiral Sir Roger Keyes, who had taken over from General Bourne, had a tremendous desire to get on with the job, but was up against a shortage of material. Furthermore, the Admiralty had constant calls on their inadequate number of ships for innumerable duties, so they had not much to spare. There were, however, a succession of raids planned, few of which came off. It was already felt that to get a lot of tanks ashore we must have something bigger than the L.C.T., but the Admiralty, understandably, said that they could not, in the existing conditions, build such ships. In September, 1941, the then C.I.G.S.—Field-Marshal Dill—put up a paper in which he said that if we were ever going back to the Continent we would have to land a lot of tanks, and the L.C.T. were much too small. I think he deserves the credit for having been the first to insist on something like the L.S.T. About the same time, the Joint Planners were told to put up a paper about returning to France. They stated that the initial assault would necessitate three armoured divisions and thirteen infantry divisions, and would require 2,250 L.C.T. Naturally that shocked everybody, as it seemed entirely outside our scope. (It must be remembered that at that date neither the Americans nor the Russians were in the War.) Nothing was done except to build a few L.C.T.

In October, 1941, Admiral Mountbatten was appointed Chief of Combined Operations, and he took over a situation in which there had been a lot of conflicting requirements and differences of opinion, but still very few landing ships and craft. Briefly, his terms of reference were, first, to carry out as many raids as he could on the coast of France and, secondly, to prepare the way for big amphibious operations. With regard to the raids we learnt a certain amount: the first thing everybody was made to realize was the utter fickleness of the weather in the English Channel; a great many raids were scheduled and mounted but never got off owing to weather. We began to appreciate what a really appalling climate there was in the Channel, even in the Summer months. We also learnt that a raid must be a small operation. If you have a return ticket for an operation with only a short time on the other side, you have not time to deploy anything more than a very small force. In my opinion the top limit for a raid is probably about 100 to 200 men.

The Landing Craft Infantry (Large) was an instance of a craft being designed for quite a different purpose than that for which it was eventually used. It was originally intended for raiding, because it was felt that it was dangerous to have the large L.C.I. hanging about off the French coast and yet something was needed to make the passage independently and disgorge about 250 men on the other side; but it transpired that it was too dangerous an enterprise to run an L.C.I. (L) on to a heavily defended beach. Nevertheless the L.C.I. (L) did invaluable work subsequently in major operations by providing a quick build-up after the assaulting infantry had got onto the beach and secured a narrow bridgehead.

The next task was to prepare for larger scale operations. That, of course, involved a lot of careful study because the problem of landing tanks was of vital

importance. So it was that the Landing Ship Tank came to be born. Captain Hussey of Combined Operations headquarters and Mr. Baker from the Admiralty went over to America where they sold the idea of building L.S.T. to the Americans who were not yet in the War. It is my firm conviction that the Americans by starting to build L.S.T. at that time contributed the biggest single factor to the success of amphibious operations, because without the L.S.T. we could not have carried out any of the big landing operations; not because of their ability to carry tanks but because they made possible a very rapid build-up. The Americans also produced the Naval Lighter pontoon of which we ordered large quantities.

#### THE DIEPPE RAID

Then came the Dieppe raid. It caused a great deal of controversy, but it was really brought about because it was considered then that for any re-entering of the Continent there would have to be a quick capture of a port and such an undertaking needed to be tried out. Also it was felt that politically we needed an offensive operation: we had some boats, the crews needed practice in and knowledge of how to handle them; so Dieppe was decided upon, the actual location being largely determined by the range of fighter aircraft cover.

The first and most important thing we learnt from that raid was the fact that a frontal assault on a well-defended port was "not on." We also realized that preliminary bombing was essential. There was no preliminary bombing of Dieppe before the operation, partly because we did not want to bomb the French people, but also because the Army Commander thought that it would block the streets of the port and his tanks would be unable to get through. We also learnt that there was a great need of close support from the sea for the period after the infantry are ashore, but before the artillery has deployed and started to fire.

As a result of Dieppe I think it was generally felt that, although fixed coast defences were very troublesome, they were not as bad as had been expected. The chief trouble was the ordinary artillery, especially mobile artillery, which was concealed in good positions and kept firing on ships and beaches during the whole operation.

The Army also learnt that they could have complete confidence in the Navy to get them there. I would say that from the naval point of view Dieppe was a tremendous success: they carried out the task absolutely punctiliously, it gave them a practice run, and the methods employed in that operation were more or less the basis for future procedure in amphibious operations.

#### NORTH AFRICA

Now we come to the North African operation. That was a new departure, because the operation was on a very much bigger scale than anything previously attempted. The United States had come into the War, and American production was turning over to war-time requirements. The operation depended on supplies and on the French being more or less with us or, at least, not too much against us. It also depended on the Navy getting large forces through without interruption from U-boats or from the air. Finally, it depended on the quick capture of air strips in North Africa and the rapid flying in of aircraft via Gibraltar.

The first thing that transpired was that we secured complete surprise. That amazed everybody at the time, and it is a never-failing source of astonishment to me how one can get surprise when you see what might be called the Port of London

floating in the ocean without it being discovered by the enemy. The next thing we learnt again was that the Navy could be relied upon to get the whole force there punctually and at the right place. The third lesson learned was that some small ports were not captured as quickly as had been hoped and supplies had to be put on to the beaches. From there the Pioneer companies loaded them on to lorries, which was the germ of the beach group. Fourthly, the Combined Operations Pilotage Party was born, to a large extent, through the North African campaign. They had people in small canoes who paddled ashore and had a look at the beach before the operations began. In this particular operation a piece of beach which appeared from the air to be sand turned out to be sandstone, which was very hard, so it became obvious that photography from the air was not infallible and that it was as well to go and have a look if possible. The next point we learned, was that the assaulting troops, particularly the American troops, carried too much equipment when going ashore. Finally, the necessity for close inter-Service planning and co-operation was emphasized. In this particular operation, the American Naval headquarters and Army headquarters were 100 miles apart throughout the planning stage and hardly met until they embarked in their headquarters ships. However, they learned their lesson.

#### PANTELLARIA

The next stage starts with Pantellaria. Before the operation against Sicily, it was decided that we must capture that island to use as an air base, and also to deny reconnaissance to the enemy. Previously it had been hoped that there would be no necessity for its capture, but eventually the naval and air commanders were insistent, and it had to be taken at short notice. It was decided to rely entirely upon preliminary air bombardment for the neutralization of the formidable coast defences and to assault about mid-day straight into the most heavily defended corner of the island. The bombardment took place, and I remember that the whole island seemed to rise like a giant soufflé, after which the assault went in and suffered no casualties, except one man who was bitten by a donkey.

After that had happened there was a tremendous amount of chewing the cud, and there were two schools of thought. There were those who said they knew it could be done and others who said it would not have happened if the defending personnel had been resident Germans. It was found that, although the defending guns themselves were not knocked out, the bombardment had dislocated any communications and signalling arrangements and the crews were "bomb happy." I think it may be said that this was the first operation where we learned the tremendous effect of a really heavy and concentrated air bombardment on coast defences.

#### SICILY

The main problem and argument about the method of capturing Sicily was the question of maintenance. Either we had to go for the few good ports in the island, thus being forced to split up the assault to various areas, or else we had to get the force concentrated and rely entirely on beach maintenance for the early stages of the operation. It should be remembered that at this time beach maintenance was an entirely new technique and had never been relied on to a large extent. After a lot of argument, it was decided to assault on the South-East part of the island and to rely almost entirely on beach maintenance for maintaining the seven divisions. As a result of this decision, an urgent note was sent to America for the highest

priority to be put on to the manufacture of D.U.K.W. A prototype was made in January, 200 were ordered, and it goes to the credit of the Americans that they were all built by June.

To sum up the results of the Sicily operation: first, once again we got surprise; secondly, the naval bombardment fully proved its worth—there had been a school of thought which had written down naval gunnery, but the ability of ships to concentrate on the few batteries that kept firing had a very good moral effect on our own troops and a very disconcerting effect on the enemy batteries; lastly, beach maintenance proved to be an outstanding success. Of course, those with experience of amphibious operations realized that the success of the Sicily operation was due largely to the fine weather, which is normal in the Mediterranean in June, thus allowing protracted beach maintenance and also to the fact that the Mediterranean is tideless.

#### "OVERLORD"

All these amphibious operations culminated in operation "Overlord." The first and main anxiety in connection with this operation was the enemy's coast defences. These were thick, strong, and well sited; they were a serious problem, but it was decided to rely on heavy bombing and naval bombardment. Another problem was underwater obstacles. There was also that big worry, the weather. Finally there was the matter of a suitable moon period which had to coincide with a spell of fine weather and the odds on that happening were most depressing. It was due to this that the Mulberries were evolved, and I feel it only right to say that I do not think Admiral Mountbatten got a fair share of the credit for the Mulberry. He produced plans for one in 1942 and did not get much encouragement.

The last important question was that of air supremacy. It was vital to obtain and retain air supremacy throughout the operation. With this in view a great bombing programme was carried out against German fighter production, and by this means the German fighter force was worn down long before D-day, and during the operation there was never at any time any serious interference from the air. Without this marked air supremacy the operation would not, in my opinion, have been feasible, but the air battle had been fought and won long before D-day.

I think the points of interest which emerge from operation "Overlord" and which have a bearing on the future, were that once again we obtained surprise, both as regards the time and the place of the assault. It showed also that beach maintenance can be relied upon under almost all conditions. By this means there is conferred on the amphibious assault complete liberty regarding the point of attack providing suitable beaches are available. For this reason increased opportunities of surprising the enemy are obtained.

Coast defences did not present very much trouble; heavy air and naval bombardment disrupted communications and shook up the crew to such an extent that their effectiveness was almost negligible. The bombardment, however, must be very heavy.<sup>1</sup>

One of the biggest menaces to the assault again turned out to be artillery, especially mobile artillery. The answer to that is tanks and close support craft.

<sup>1</sup> See Lecture on Naval Bombardment by Commander J. G. Hamilton, R.N., in *JOURNAL of August, 1945*.



The weather turned out to be as bad, or even worse than had been feared, but the landing ships and craft appeared to be less sensitive to weather than we had expected.

There is no doubt that the absolute criterion for an amphibious operation is a rapid build-up. Whenever and wherever the build-up slowed down, the attacking force was exposed to considerable hazards if a counter-attack was made. At one particular beach the build-up was slowed right down and most of us feared that the Germans might counter-attack, in which event they would undoubtedly have met with success and driven the force off the beach.

Lastly, naval bombardment proved to be of great value not only during the assault but for quite a considerable time afterwards. Its effectiveness was, of course, much enhanced by air spotting, which would have been impossible but for our air supremacy. Naval bombardment, which previously had swung from being thought absolutely accurate and wonderful, to being utterly inaccurate and useless, now seems to have settled down as a very valuable adjunct to the amphibious assault and early operations ashore. Its morale effect is good on our own troops and bad on the enemy.

#### THE FAR EAST

In the Far East we had no large-scale amphibious operations, but the Americans did, and their technique showed enormously increased mechanization. They were in a very hot climate and they economized to the maximum extent in man power by never allowing a man to do what could be done by a machine.

In general, the trend in the Pacific was for beach groups and airfield construction units to become increasingly mechanical, for the landing ships and craft to be ocean-going, and for smaller craft to become obsolete. The amphibian is gradually replacing the L.C.V. (P)<sup>1</sup> and the tracked amphibian appears to be a more efficient general-purpose vehicle than the D.U.K.W. Preliminary bombardment both from the sea and from the air was always carried out with maximum intensity.

#### THE FUTURE

I do not know whether future operations will be amphibious or not, but I would suggest that whatever element we fight in there must be inter-Service co-operation. There are people who say, that the great thing about this war is that we have learned that lesson and shall not forget it. I am not entirely a subscriber to that view. I do not say that the three Services did not enjoy that co-operation during the War, but with peace comes shortage of money and man-power, and I think there will be a strong tendency in the Services to concentrate on their own parochial affairs. That is my fear. I think there are some people who still say: "Let us have a bit of honest-to-God soldiering instead of messing about with this wet stuff." I do not know the best way to keep it alive, but there appear to be two possible ways: one is to do everything possible on the Staff College side, that is to say make those establishments well and truly inter-Service; and the other, is to have a separate allotment of money to ensure that the technique and development and research and training in this particular subject is kept alive. If that is not done, it is my opinion that it will quite likely die. I do feel very strongly, that whatever kind of operation we have, this inter-Service question is of vital importance, and our aim should be that denoted by the name of this Institution—truly United Services.

<sup>1</sup> Landing Craft Vehicle Personnel.

## DISCUSSION

CAPTAIN JOHN TERRY, R.N. : I should like to remark on the question of surprise to which the Lecturer referred. It seems to me that surprise was achieved in the North African campaign firstly because of the phenomenally good security in this country and in America, which I know was a surprise to most people concerned, and secondly because our position in the air even then was so strong that it did not allow the enemy to carry out thorough reconnaissances. Also they have always been continentally minded and not very interested in raids from the sea. Again, as happened in the Sicilian campaign, elaborate steps were taken with regard to routing, and the convoys appeared to be going farther East than in fact they were.

There was also the tactical advantage of approaching in the dark which gave a wide choice of points at which to attack, and it is still quicker to carry troops in ships than it is by road or railway, so the advantage remains with the attacker.

So far as Normandy is concerned, I would suggest that most of the surprise that was achieved was due to the fact that the German General Staff was extremely continentally minded and never consulted the German Admirals as to where the British were likely to attack. Naval factors chiefly decided both our point of attack and our time of attack. I think if the German General Staff had been more naval minded they might have done much better.

THE LECTURER : I am sure that is right, but the thing that interests me concerning the place of attack with regard to the Normandy landing is that five separate appreciations were made in this country by various responsible planning staffs and they all pointed to the same area. It is a mystery to me why the Germans who, presumably, also made appreciations, did not arrive at the same conclusion.

MAJOR-GENERAL H. ROWAN-ROBINSON : I wonder if the Lecturer could tell us his views on the subject of co-operation between the three Services. He mentioned some of the difficulties that would stand in the way of co-operation, and I suggest that possibly those difficulties might be surmounted by the institution of a Ministry of Defence. Every nation seems to be coming round to that view, and virtually every one of the great leaders has subscribed to it. President Truman has addressed Congress on the subject, India has come to it, Russia has come to it, and so have others ; but I should like to hear the Lecturer's views on that subject.

THE LECTURER : So far as I know, I believe it is intended to perpetuate our Ministry of Defence, which was evolved during the War ; possibly it will broaden its scope. Even though you have that co-ordination at the highest level, the danger, as I see it, is the separatism of the three Services themselves. During the War, the Navy, Army and Air Force were all more or less in the same place, but in peace time they are apt to be in different places, and that is what I feel one is up against : in a war they are thrown together, and it is when that intimacy is removed that I feel it is so easy for them to drift apart.

It was my experience in the early stages, when the Services were first mixed, that one found separatism. This was noticeable in messes, but after a few days it would be overcome. There was, however, always that tendency which I think was probably based on shyness. The point I was trying to make was that unless active steps are taken to encourage intimacy and keep it going, the Services will tend to go back into their own shells, so to speak, and I do not think a Ministry of Defence will be able to rectify it on too high a level. That is why I believe Staff Colleges can assist in this matter.

CAPTAIN E. ALTHAM, R.N. : When, in company with a Major-General and an Air Marshal, I was writing *The Manual of Combined Operations* after the 1914-18 war, we were brought up constantly against a situation where, one of us having initiated some solution, another would say : " I am quite sure the Admiralty (or the War Office)

would not like that." Then we agreed that we would not regard ourselves as representatives of the Admiralty, War Office or Air Ministry, but as three commanders who were going to meet a common enemy in half an hour and who had to decide what in the circumstances we would do. That is the only way to write a practical Manual; then others can pick it to pieces and try to find something better to put in its place.

The Lecturer has emphasized the danger of the Services drifting apart and I would urge that before the people with recent experience of amphibious warfare have been scattered or forgotten, they should collaborate on recording as they collaborated in planning, so that their successors will have something to work on and not have to get results by that uneconomical process of "trial and error."

MAJOR-GENERAL A. R. CHATER: The three operations in the West to which the Lecturer referred differed in one important respect from the American operations in the Far East. As he pointed out, the operations in the West all achieved tactical surprise, but the operations in the Far East relied largely on drenching the enemy's defences with fire. That worked very well so long as the Americans were operating against small islands, because there were no strategic reserves to be massed behind and brought forward for a counter attack; but would that technique have worked as well in an operation against a mainland?

I do not know what was the plan of the operation against the mainland of Japan, but I should be interested to know whether the same technique was going to be employed in that operation and, if so, whether it would have been sound.

THE LECTURER: The Americans were very concerned about the assault on the home islands because they were thinking and planning the assault before the atomic bomb was dropped. They had to be prepared to go into heavily fortified areas, and there was the question of enormous distances and the difficulty of piling up sufficient aircraft for the bombardment. In order to compensate for that, I think the intention was to put in vast numbers of men. The total assault, I believe, was something like sixteen divisions, which was three times more than the number used in Operation Overlord. They were carrying out a sort of Overlord operation, but instead of having England twenty miles away, they had their mainland some thousands of miles away, which was a serious problem for them.

#### THE CHAIRMAN

I am sure you will all agree that this has been a most interesting lecture which has brought out clearly the various lessons we learned from amphibious operations during the War.

I agree with what the Lecturer said, particularly about the necessity of retaining that close co-operation between the Services which was achieved during the war years. That is most important.

The first point I should like to raise concerns the question of production in 1940-41. I think you may remember a recent lecture here in which the Chairman made the point that in any invasion the actual invasion itself constituted only one part of the campaign. When you think back to 1940-41, our first requirement then was to win the battle of the Atlantic so as to get to this country food and fuel and all those things without which the Air Force could not fly and the Army could not fight. Until we won that battle our limited resources could only be used for essential production—and the building of landing craft was not at that stage essential.

Later on, when we had the whole of the American resources at our disposal, we were able to build that immense fleet of landing ships and craft which did us so well in the operations which were to come.

I should like to pay my tribute to the immense drive, energy and extremely fertile imagination which was then displayed by Combined Operations Headquarters.

My second point refers to lessons learnt. I always distrust them. Extract them, record them, chew on them—that you must do, but once you have done so they should be treated with the gravest suspicion. You remember the Lecturer told us the lesson learnt from the Dieppe Raid was not to carry out a frontal assault on a well-defended port. Well, we decided to do that very thing at Pantellaria as the best means of getting ashore. Circumstances alter cases, and the one thing necessary in all operations is to keep a fertile imagination and never to accept a rule laid down as being necessarily one you must not break.

There is just one other matter. We have got used to thinking of invasion in terms of masses of ships, "Mulberries," etc., but we should be deluding ourselves if we thought that if another war came it would be necessary to have all those things before an invasion could take place, either by us or by the enemy.

Finally, I might just emphasize once more that a nation which can retain command of the sea by the joint use of air power and sea power has very little to fear from invasion.

I am sure you would like me to thank Brigadier Head most warmly for the excellent lecture he has given us and which we have enjoyed very much indeed.

The customary votes of thanks to the Lecturer and Chairman were carried by acclamation.



## THE INFLUENCE OF LOGISTICS ON OPERATIONS IN NORTH-WEST EUROPE, 1944-1945

By BRIGADIER C. RAVENHILL, O.B.E.

**L**OGISTICS is "that branch of military science relating to the movement and supplying of armies." In this sense armies should be interpreted broadly as including besides the other fighting Services the minimum requirements for the civilian population. Both Field-Marshal Viscount Montgomery and General Eisenhower draw attention on several occasions in their reports of the campaign in North-West Europe to the dependence of operations on the solution of the logistical problems confronting their respective commands, and it is probably true to say that, in framing the strategy of that campaign, logistics played a more important and vital role than even the political factor. The reason for this is that modern war, as fought offensively by the Allies, calls for immense quantities of men and material, the provision and movement of which must be a major consideration at all stages of operations. Thus, for every division, British or American, deployed on the Continent, some 40,000 men and 8,000 vehicles had to be landed, and these figures exclude those employed at the main base. The consumption of ammunition, petrol and stores by this "divisional slice" was found to be about 700 tons a day, excluding reserves, air forces and civilian requirements, of which about 520 tons a day was required forward of Army railhead; and though the proportions of ammunition and petrol varied with the type of operation being undertaken, it was found in practice that these figures remained very constant.

As some ninety divisions were available to the Supreme Commander by March, 1945, the daily logistical effort necessary to keep this force in the field amounted to some 63,000 tons. In addition, immense tonnages had to be handled and moved in order to maintain balanced reserves and the Allied air forces, and to meet the essential requirements of the civilian population. Furthermore, the movement of all material had to be effected over a rail and road system which had been ravaged by an intensive bombing offensive and subjected to the demolitions of a relatively orderly retreat.

No one will dispute the great credit due to the services and staffs at all levels in overcoming the difficulties resulting from the logistical problems which arose during this campaign. To quote General Eisenhower: "The spectacular nature of the advance was due in as great a measure to the men who drove the supply trucks as to those who drove the tanks," and "The incentive offered by the chance of a smashing victory, however, drove the men in whose hands the maintenance of supply rested to feats of superhuman accomplishment."

### PLANNING THE STRATEGY OF THE CAMPAIGN

The Combined Chiefs of Staff directive to the Chief of Staff to the Supreme Allied Commander (C.O.S.S.A.C.) limited specifically the number of landing and assault craft that were to be made available for the invasion of North-West Europe. This availability of craft, and therefore the size of the assault, was increased later as a result of strong recommendations made by Field-Marshal Viscount Montgomery and General Eisenhower. From these data it was a relatively simple mathematical problem to compute the initial personnel build-up; the provision of the required amount of merchant shipping to maintain the maintenance build-up was never really in doubt.

The first major conflict between the strategical and administrative planners arose over the selection of the area for the assault. The administrative planners insisted that the risks of serious interference to the landing of men and stores over open beaches could not be accepted after  $D + 5$ , an opinion which indicated that a good port had to be captured before that date. As is now well known, this problem was solved by the introduction of an artificial harbour, constructed in the United Kingdom, towed across the Channel and sunk in position off Arromanches. What is less well known is that this harbour (the "Mulberry") originated from a suggestion made by a British officer of the naval planning staff at C.O.S.S.A.C. to meet the objections of the administrative planners to the area selected for the assault. Once the "Mulberry" proved a practical proposition, the beaches selected for the assault had much to commend themselves also from the administrative aspect, for their capacity for the transit of men, vehicles and stores during good weather was virtually unlimited.

The main logistical problem anticipated during the assault and initial build-up phase concerned the landing of sufficient supplies to cover expenditure and to build up reserves as rapidly as possible in order to insure against possible interruptions of the sea line of communication, to meet any abnormal requirements by the forces deployed ashore, and to accumulate reserves to support later advances. The target, which was fully achieved, was to land two days' reserves for the forces ashore by  $D + 3$ , fourteen days reserves by  $D + 41$  and twenty-one days reserves by  $D + 90$ . In the event, an average of over 30,000 tons of stores a day were handled across the beaches and through "Mulberry," and by  $D + 38$  a million tons of stores, over half a million men and more than 300,000 vehicles had already been landed in Normandy. Many expedients for accelerating the landing of stores, such as using concrete barges as floating petrol installations or the piping of it ashore over the beaches, were tried out. Some were adopted and an intensive use was made of DUKWs, but the bulk of the work of handling the immense quantities of stores that flowed into Normandy during the early stages of the operations fell on the Beach Groups which had been specially formed and trained for this purpose.

No discussion on the influence of logistics on the North-West European campaign would be complete without recognition of the magnificent long-distance planning and foresight in the War Office which provided and assembled the necessary equipment and stores for this mammoth operation and constructed in the right places and on a lavish scale all the camps, hards, marshalling areas and other installations essential to the mounting of an assault operation by the forces of two nations on a scale more vast than ever attempted or contemplated before.

#### PORTS

As we know, the problem of providing a port during the initial stages of the operations was met by the introduction of the "Mulberry," but the "Mulberry" suffered from many restrictions when compared to a modern deep-water port equipped and laid out with a view to handling large quantities and different types of cargoes. For example, "Mulberry" was not equipped to handle coal in bulk or rolling stock. Furthermore, it was evident that it could not be relied on to withstand the autumnal and winter gales that might be expected any time after mid-September; nor could it alone provide sufficient means for the introduction and maintenance of large forces assembled or assembling in the United States. Even the acquisition of Cherbourg—a port whose capacity after repair was estimated to be approximately

10,000 tons a day—would not suffice to meet this latter requirement. For these reasons it was evident that further deep-water ports must be in Allied hands by September.

The assessment of the eventual capacity of various ports proved a difficult problem and of all the factors that influenced long-term logistical planning was probably the most important. It was expected that the enemy would hang on tenaciously to each port and in each case, before capitulating, carry out very thorough demolitions to the harbour, quays and port installations. Committees of experts were therefore formed and required to assess the capacity of each port at various stages of its rehabilitation, taking into account all the known factors and assuming maximum enemy demolitions.

The problem of maintaining the build-up of the United States forces was the main factor that led to the decision during planning that the ports of Brest, St. Nazaire and Lorient must be captured and a major artificial port at Quiberon Bay constructed before the winter gales set in. The decision to open the Brittany deep-water ports in preference to Le Havre and the minor Seine ports resulted from the expectation that the enemy would stand on the Seine and would deny the use of the Seine ports to the Allies till mid-winter; also from the fact that it was doubtful if the capacity of these ports would in any case be sufficient. In the event, as the enemy defended the Brittany ports so vigorously and as the opportunity offered to sweep rapidly through northern France and Belgium, thereby capturing the port of Antwerp intact and ensuring the early reduction of Le Havre, it was not found necessary to sacrifice lives or divert material to obtain the use of the major Brittany ports for the import of men and stores. The fact that, until Antwerp was opened at the end of November, divisions could not be routed direct from the United States to France (mainly on account of the vast amount of boxed vehicles and equipment that accompanied them) is a good illustration of limited port capacity restricting the build-up of an expeditionary force, as this staging in the United Kingdom caused considerable delays to the transshipment of American divisions. As a result, at the time of the Ardennes offensive, the strength of the Allied Expeditionary Force was considerably lower than it might have been, had further major ports been captured earlier.

Few will disagree that the vital need to acquire deep-water ports proved the most influential logistical factor in the campaign. Thus it was consideration of this factor that was primarily responsible for determining the original lodgment area (which included the Brittany deep-water ports), for deciding that priority must be given to the Northern Group of Armies (21st Army Group) in the advance across France and Belgium in order that the ports of Le Havre and Antwerp, and to a lesser extent Dieppe and the Pas de Calais ports, should be freed, and for launching Operation "Anvil" against southern France, thereby opening the first port of France, Marseilles.

#### LIMITING FACTORS

The limiting factors in finding a solution to the logistical problems and difficulties encountered during this campaign were:—

- (a) capacity of the transportation systems concerned, i.e., port handling and clearance capacities, road and rail lines of communication, air transport and P.O.L. (Petroleum—Oil—Lubricants) pipe-lines.

- (b) available manpower, including liberated manpower whenever possible.
- (c) lack of administrative flexibility until the end of 1944, when a certain degree of flexibility could be obtained as a result of opening Antwerp as a combined British-American port, the linking up of the Marseilles-Rhone Valley and Paris-Metz lines of communication, and the capture in good condition of the inland waterway and rail transport systems of Belgium and Holland, thereby enabling train-paths, rolling stock, etc., to be shared between the various agencies in direct accord with projected strategical objectives.
- (d) indifferent administrative discipline, e.g., by November 17 $\frac{1}{2}$  million jerricans had been imported into France, of which only 2 $\frac{1}{2}$  million (full and empty) could be traced at that time; the bulk of the deficiency had been "lost."

It was inevitable, therefore, that the influence of logistics should be more negative than positive up till the end of 1944. With the shortened lines of communication resulting from the introduction of an advanced base (for both Allies) in Belgium and the increased flexibility of the various lines of communication that was achieved towards the end of 1944, logistics began to exert a very positive influence on strategy until again at the close of the campaign the rapid advances of the Allied armies into Central Germany outdistanced the logistical means of support and logistics reverted to its negative role.

#### THE BREAK-OUT

By the middle of July the logistical potential of the A.E.F. was very great, but the saturation point of the force that could be maintained through the "Mulberry" (winterized) and Cherbourg during the winter months had almost been reached. This latter factor was certainly not a major consideration in planning the break-out, but it was certainly present at the time in the minds of those responsible for the maintenance of the A.E.F.

It was fully realized that if the break-out was completely successful, it would not be possible to meet all the requirements of both Army Groups beyond limited distances. It therefore became necessary, during the latter stages of the advance of the A.E.F., for S.H.A.E.F. to allocate rail movement and air supply in accordance with the priorities decided by the Supreme Commander. In practice no attempt was made to divert road capacity (i.e., motor transport) from one Army Group to another in view of the organizational difficulties involved, though the availability of this means of transportation was always taken into consideration before allocations of other means were made. Once the Central Group of Armies had cleared Paris, priority of support was given to meet the requirements of the Northern Group of Armies, the main influencing factor in reaching this decision being the vital need to obtain ports, particularly the major port of Antwerp. Therefore it came as no surprise to S.H.A.E.F. when the Central Group of Armies eventually outran their logistical support in the neighbourhood of Metz. Indeed, it was only by such improvisations as the "Red Ball Express"<sup>1</sup> that the United States forces were enabled to advance so far.

<sup>1</sup> The "Red Ball Express" comprised a series of convoys of ten-ton U.S. trucks, driven at very high speed along a specially reserved one-way route from the depot area South of Cherbourg to the forward areas—an expedient which also proved very extravagant in wear and tear of vehicles and drivers.



## ANTWERP

When the port of Antwerp, worth 40,000 tons a day in terms of unloading capacity, was captured intact by the 11th Armoured Division on 4th September, the A.E.F. was still being maintained through the beaches, "Mulberry," Cherbourg and a few minor ports, over a line of communication over 300 miles long. In order to sustain the advances of the A.E.F. towards the Siegfried Line, three American divisions had been "grounded" near Cherbourg, all their transport being diverted to assist the victorious armies forward. Maintenance of these divisions was at the time reduced to the barest minimum—approximately 50 tons a day. Le Havre and the Channel ports were still holding out and it was quite evident that it would take a long time even after their capture before they would pay a good dividend in terms of port capacity; furthermore the limited rail communications forward from these ports were already congested.

The opening of Antwerp would not only result in shortening the lines of communication of both the Northern and Central Groups of Armies by over 300 miles, but would also release powerful forces from the Central Group of Armies for offensive operations, as this Army Group's activity was severely curtailed at this period through inadequate logistical support resulting from their long lines of communication combined with insufficient transportation resources. These facts were, of course, known and appreciated when the vital decision was taken to carry out the Arnhem operation, but General Eisenhower himself admits that at this time "our logistical situation, coupled with the fact that the terrain was suitable to the defence, aided the enemy." When this operation failed to bring the full fruits that had been hoped for, first priority was given to the clearing of the mouth of the River Scheldt in order to open Antwerp as a port. The first cargo vessel entered Antwerp on 26th November, eighty-two days after its capture.

## ENEMY LOGISTICS

As the next major event in the North-West European campaign was the Ardennes counter-offensive, this may be an appropriate juncture to discuss the enemy's logistical problems, especially as his counter-offensive in December threatened those vital elements of the Allies' supply systems—the advanced bases of both Northern and Central Groups of Armies and their main supply port. In this connection, it is not generally known that the enemy at one time was within a few hundred yards of a dump of three million gallons of petrol on the Walmes-Malmedy road, the capture of which, even partially intact, might have gone a very long way to solve his main difficulty at that time—the problem of P.O.L. supply, which factor played an important part in the failure of this offensive.

Though the Germans were never so extravagant as the Allies in their requirements of material (their division consuming, it is thought, something like 200 tons per day) and though their problem should have been simplified by the fact that they were always retreating, their supply and movement problems throughout the campaign were immeasurably more difficult than those confronting the Allies. This fact was due in the first place to the Allied strategic bombing policy and, to a lesser extent, to interference by the Tactical Air Forces and by *maquis* and partisans. Thus, during the battles in Normandy, the movement of reinforcing German formations took a prodigious time and encountered all manner of difficulties, while rail-heads had usually to be sited behind the Seine or Loire. Thus also we learn that by January, 1945, the total output of petrol in Germany had fallen to 20 per cent. of

the pre-war figure, by which time the supply and transportation systems in Germany were subject to almost continuous interference from the air. Eventually the enemy's logistical problems became insoluble.

#### THE RHINE CROSSINGS

The main strategy for the 1945 campaign was to attack across the Rhine with a view to deploying the maximum possible force North of the Ruhr. It had already been stated that by the end of 1944, the Allied logistical situation had developed a considerable degree of flexibility, and during the operations for crossing the Rhine it had been found possible to reinforce sectors with additional logistical support. The linking up of the lines of communication of the Southern and Central Groups of Armies also enabled further use to be made of the surplus capacity of the Marseilles-Rhone Valley line of communication in support of the Central Group of Armies.

As early as September, 1944, it had been decided, from studies of the terrain North of the Ruhr, that the limiting factor to the size of the force that could operate in this area would be the logistical capacity of the crossings over the Rhine itself. The road and, where intact, rail systems both East and West of the Rhine were adequate to support considerably larger forces than could be maintained over the Rhine bottleneck, resulting from the relatively few number of places where bridges could be constructed with the necessary entrances and exits. The carriage forward of all the bridging material required was in itself no mean task, but fortunately came at a time when the additional logistical support was available without interfering with other operations. After careful examination of the capacity of the crossings, it was deduced that no more than thirty-five divisions could be maintained over these crossings North of the Ruhr and that this would only be possible if 75 per cent. of the P.O.L. requirements of the force were delivered by pipe-line to points some ten miles East of the Rhine. This latter factor led to the decision to lay pipe-lines in German territory. This had previously been considered unwise in view of the protective and maintenance commitments.

The limitation of the size of the force to be employed North of the Ruhr to thirty-five divisions influenced the whole strategy of the Rhine crossings and subsequent operations, as some fifty-five divisions were left available for employment South of the Ruhr and on the southern Rhine front, for all of which there was at that time adequate logistical support. A proportion of these forces were required in a defensive role, but there were also sufficient available to enable both the Central and Southern Groups of Armies to stage major offensive operations across the Rhine.

#### THE FINAL PHASE

Soon after the three Army Groups had crossed the Rhine in March, a situation developed not dissimilar, from the logistical point of view, from that which followed the break-out from Normandy. The railway systems East of the Rhine had been bombed and demolished to such an extent that all lines of communication were virtually restricted to roads, supported to a limited extent by air supply. Added to this, no rail bridges were intact over the Rhine itself, so that all material for the fighting forces had to be collected by road from depots and railheads West of the Rhine, except bulk P.O.L., which was piped to points East of the Rhine, eventually to Bocholt. Though divisions were now expending far less ammunition than normal, their daily requirements of P.O.L., bridging stores and airfield repair material increased to such an extent that the average consumption (520 tons per day per

division forward of Army railhead) did not decrease. Thus it became evident that soon there would be three Army Groups advancing each at the end of a very extenuated road line of communication.

During the planning of these final operations, the Supreme Commander had required three major thrusts to be examined in detail—one to Hamburg and the Baltic (by the Northern Group of Armies), one to Berlin (by the Central Group of Armies), and one to Munich (by the Southern Group of Armies). Once more it was found that, relying on road and air lines of communication East of the Rhine, sufficient logistical support would not be available to attain all three objectives. In the event, conditions were almost exactly as had been envisaged during planning and priority was given to the thrusts to the Baltic and to Munich. The thrust to Berlin was halted about Magdeburg, primarily through lack of logistical support.

#### SUMMARY

The purpose of the foregoing has not been to attempt to establish that logistics is the primary or only consideration in strategical planning, but that this branch of military science is one of great importance in modern warfare and one that must be given high priority at every stage in planning and executing operations of war. Logistical support may be compared to a piece of elastic, the further it is stretched the more slender it becomes until a danger point is reached after which it is liable to break, leaving the force it was supporting "high and dry." This danger point was reached twice during the operations in North-West Europe, first when the A.E.F. had advanced from the beachhead to Holland (Northern Group of Armies) and Metz (Central Group of Armies), and again as the Army Groups reached Lubeck, Magdeburg and Munich respectively. In each case the road lines of communication had been stretched over 300 miles. Continuing the comparison, when the elastic is thickest then is the logistical potential at its greatest. This occurred in July, 1944, before the break-out and again at the Battle of the Rhine crossings and the period immediately preceding.

It has been seen in this short account how the influence of logistics during the campaign led to the introduction of the "Mulberry," to the delineation of the initial lodgment area in France, to priority being given to the capture of deep-water ports in North-West Europe and Southern France and how this branch of military science influenced the whole strategy of the Battle of the Rhine crossings and the deployment of forces East of that river. It is felt that the importance of this factor needs no further emphasis.

#### CONCLUSIONS

1. Every commander must give full consideration to the administrative (logistical) factors at all stages of planning and preparing operations. This is now an accepted principle.

2. There must be a small cell of administrative (logistical) planners working in close co-operation with the R.A.F. and Services at all higher headquarters. These planners must be brought into the picture from the very beginning of any project, otherwise much valuable time is likely to be lost.

From this account the impression may have been gained that administrative (logistical) planning is easy. Unfortunately this is not so. While certain data for outline planning have been deduced from experience, each operation and each theatre of war has to be studied individually before computations relative to future

operations can even be commenced. Furthermore, allowances must be made for many items that cannot be related to the daily consumption per head or per division, items such as heavy bombs for shore-based aircraft, material for building airfields and landing strips, rolling stock, coal, pit-props for captured coal mines, transportation stores, electric generators, Civil Affairs requirements, etc., etc.

3. Every force must be carefully balanced as between fighting and administrative personnel. The United Kingdom (and to a lesser extent the United States) cannot afford to waste any manpower on administrative overheads; there must therefore be no over-insurance on the part of the administrative planners. In the North-West European campaign the right balance was found for the amounts of material that had to be handled.

4. We must try to reduce the load on the administrative machine in order to free more men to take part in active fighting. The total tonnage imported by the 21st Army Group alone during the campaign in North-West Europe was over 7,300,000 tons, which is equivalent on an average to approximately 635 lbs. (more than  $\frac{1}{2}$  ton) per man per day. No other national army, except that of the United States, contemplates expending daily 520 tons of ammunition, P.O.L. and stores per division forward of Army railhead, and this figure does not allow for the not inconsiderable requirements for the R.A.F. and minimum civilian needs. These figures speak for themselves; surely they are capable of substantial reduction?



## THE GERMAN AIR FORCE AND ITS FAILURE

By AIR VICE-MARSHAL SIR THOMAS W. ELMHIRST, K.B.E., C.B., A.F.C.

On Wednesday, 23rd October, 1946, at 3 p.m.

AIR MARSHAL SIR ARTHUR CONINGHAM, K.C.B., K.B.E., D.S.O., M.C., D.F.C., A.F.C.,  
in the Chair

THE CHAIRMAN on introducing the Lecturer said that Air Vice-Marshal Elmhirst in 1940 had a good deal to do with the Battle of Britain as an onlooker, watching in the Box Room all that was happening. Afterwards he went out to the Mediterranean and along the whole of North Africa, looking after supply and organization, and later to North-West Europe; on both these occasions he was most interested in what the German Air Force was doing. Finally, after the War, he was appointed Head of Intelligence at the Air Ministry, as A.C.A.S.(I.)

### LECTURE

**I**F we see failure in persons or buildings, we look first at the forebears or the foundations. So what were the forebears and foundations of the German Air Force? The views I shall express on its failure are my own, but they are based on such documents as I have been able to read that have come to us from German archives and from the interrogation of G.A.F. personnel. It is as yet too early to pronounce final judgment and the historians may come to quite different conclusions, but the view of one who took part in this last war will, I hope, be of value.

There was little of either tradition or experience on which Goering and Udet could build up the G.A.F. It had been formed in the 1914-18 War as an Army support force, and the majority of the best flying personnel in that war and of age who would have been leaders in 1939 had been killed. Also, full conversion to the Nazi doctrine was necessary to ensure high appointment in 1939. The two leaders I have mentioned were an odd couple to build a firm foundation, and their experience was unlikely to be sufficient to plan and build up a balanced force and lay down a policy for its operation in a world-wide campaign.

There was a long gap between 1918 and the middle 1930's, when the G.A.F. began to take shape. There was no Air Force Staff College to digest the lessons of 1914-18 and to produce a school of thought all looking ahead. The G.A.F. was built up in a hurry by Goering and his counsellors, and they were many, including Hitler; but none of the influential ones or the German Supreme Command looked much further than an air force as an aid to their army. Again, Goering, as its founder and Commander-in-Chief, was very jealous of his Air Force, and any meddling by the Supreme Command or German Navy in his policy was not appreciated. It seems doubtful whether any combined staff study at the highest level to consider the employment of the G.A.F. had ever been undertaken. Germany was a military nation and it was presumed that Goering with his soldier/airman background would use his force to assist the Army.

How then, did it become that very effective weapon it was in those first three years of the War? To begin with, Goering made it a *corps d'élite*: he could get the best of personnel and the training was good. Then the pay was good and the quarters were good. The aircraft were very good and numerous—the product of a first-class civil air transport industry. The morale was high. There was no Treasury limitation. There was a lavish ground administrative organization, and a highly competent and lavish ground signals organization. There was plenty of transport, both M.T. and air, and the force was like a tactical air force, fully mobile.

At its peak, the G.A.F. included just under 3,000,000 men. Its signal service had 200,000.

It had one valuable proving ground before 1939 and that was in the Spanish Civil War where aircraft and bombs were tried out and where officers obtained good tactical knowledge. It was there, too, that the theory of an air force being used mainly as an instrument of army support took final shape. In short, it can be said that the G.A.F. in 1939 was a first-class tactical air force, provided there was little or no opposition to it in the air.

#### THE OVERALL CONTROL

But here a word of explanation regarding the overall control of the German armed forces as a whole is necessary, for in this control was surely the seed from which the final failure grew.<sup>1</sup> From the early months of 1942, Hitler was Commander-in-Chief of all the Services and from his field headquarters exercised such command at most stages in the War. There were Commanders-in-Chief of each Service: Raeder and then Doenitz for the Navy, Goering for the Air Force, and first Brauchitsch and then, after the Winter of 1941, Hitler himself for the Army. Under Goering there was the Air Ministry virtually controlled by the Chief of the Air Staff. But directly under Hitler as Chief of all armed forces, and level with Cs.-in-C of the three Services, was the O.K.W.,<sup>2</sup> a Supreme Headquarters Staff who were responsible to Hitler for the strategic policy of the War and the overall planning and intelligence. Here was a brilliant military staff of some seven hundred officers, but their minds were centred on land warfare. There was one Vice-Admiral in this staff up against a Field-Marshal and three full Generals; but the highest ranking G.A.F. officer was one, I repeat one, Group Captain.

How then did the Chief of Air Staff of the G.A.F. work? He could only approach Hitler through his C.-in-C.—Goering who, as Reich Marshal, had many other jobs. The C.A.S. could have but little influence with the Supreme H.Q. staff with one Group Captain as his representative. His only hope when he had a policy and wanted priorities was to get Goering to bully Hitler. After the first two years of the War, Goering sat back and the G.A.F. took a very back seat in the Councils of State that directed the German war policy.

The G.A.F. accordingly went into war an exceedingly strong, well trained and equipped tactical air force as a support to an army for a European land war. Goering may have had other ideas, but Hitler and the Supreme Command Staff had not. The G.A.F. had no "functional" commands for studying the use of air fighting in home defence. In fact they had no night fighters. It had no Command for operating with the Navy, no shipping "strike" force; Goering and the Admiralty never got on. It had no Bomber Command planning the strategic use of bombers. In general it was an unbalanced force to meet opposition. Perhaps the actual figures at outbreak of war would be more convincing:—

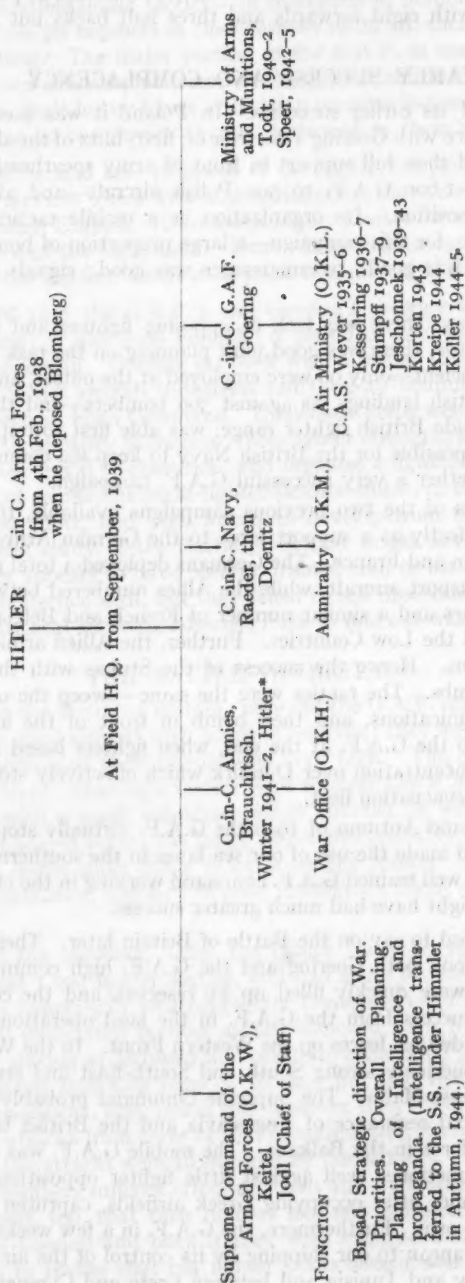
Long Range Bombers ...	1,200
Dive Bombers ...	350
Short and Long Range Recon- naissance aircraft ...	670
Single-engined and twin-engined Fighters ...	1,500
1,000 Transport aircraft.	

No more than 75 per cent. of these would or could be thrown in to win the most vital ventures.

<sup>1</sup> See Diagram I.

<sup>2</sup> *Oberkommando der Wehrmacht.*

OVERALL CONTROL OF THE GERMAN ARMED FORCES



\*—After failure of the Army in Russia.

DIAGRAM I

These give 60 per cent. bombers and reconnaissance aircraft and 40 per cent. fighters—like a soccer team with eight forwards and three half backs but no full backs or goal keeper.

#### EARLY SUCCESS AND COMPLACENCY

The G.A.F. had its earlier successes. In Poland it was used efficiently and correctly in accordance with Goering's doctrine of, first, blitz of the airfields, secondly, communications, and then full support in front of army spearheads. It had overwhelming numbers—1,600 G.A.F. to 500 Polish aircraft—and after the opening day little or no opposition. Its organization as a mobile tactical air force was suitable. Its balance, for this campaign—a large proportion of bombers to fighters, was good; mobility was good; reconnaissance was good; signals and links to the Army were good.

Again, in Norway, there was lack of opposing fighters and everything went swimmingly. Here, too, there was good joint planning on the task force level. The fighter force was sufficient—only 90 were employed at the outset, and were increased to 110 after the British landings, as against 360 bombers—and the bomber force, working mainly outside British fighter range, was able first to impede and then to make it virtually impossible for the British Navy to keep sea communications open with Norway: altogether a very successful G.A.F. campaign.

With the lessons of the two previous campaigns available, the overwhelming air force worked perfectly as a support force to the German Army in the advance into Holland, Belgium and France. The Germans deployed a total strength of 3,500 combat and 500 transport aircraft, while the Allies numbered between them some 250 R.A.F. Hurricanes and a similar number of French and Belgian fighters based in North France and the Low Countries. Further, the Allied armies were woefully deficient of A.A. guns. Hence the success of the Stukas with their demoralizing dives, sirens and bombs. The tactics were the same—sweep the opposing airfields clear, attack communications, and then bomb in front of the advancing Army. A check did occur to the G.A.F. at the end, when fighters based in England were able to produce a concentration over Dunkirk which effectively stopped the G.A.F. from destroying our evacuation fleet.

In the Summer and Autumn of 1940 the G.A.F. virtually stopped our English Channel shipping and made the use of our sea lanes in the southern North Sea very difficult, but a really well trained G.A.F. command working in the closest touch with the German Navy might have had much greater success.

I will have a word to say on the Battle of Britain later. Their lack of success in that air battle shook both Goering and the G.A.F. high command; but it was an incident: losses were quickly filled up by reserves, and the conquering Hitler expected the same success from the G.A.F. in the land operations against Russia to come as had attended his forces on the Western Front. In the Winter of 1940-41 part of the G.A.F. suddenly swung South and South-East and staged a short but bitter campaign against Malta. The Supreme Command probably called it off too quickly, but the initial resistance of Yugoslavia and the British landing in Greece needed a strong air force in the Balkans. The mobile G.A.F. was switched to that theatre and again functioned well against little fighter opposition; it cleared the way for the Army and, after occupying Greek airfields, captured Crete by a well planned attack of its own. Furthermore, the G.A.F. in a few weeks virtually closed the Eastern Mediterranean to our shipping by its control of the air over the narrow waters between Sicily and Tunisia and between Crete and Cyrenaica.



In the Summer of 1941 came the attack on Russia. Here the G.A.F. was to carry out its classical blitzkrieg tactics—in concentrated numbers, clear the enemy airfields and then use its bombers in close support of its advancing army. All went well at the beginning. The major portion of the G.A.F. in massed attacks caused the Russian air force catastrophic losses on the ground and in the air, and likewise with their bombers dealt heavy blows at Russian communications and strong points. The G.A.F. claimed 22,000 Soviet aircraft destroyed in their 1941 campaign.

A word might be said here in praise of the highly competent G.A.F. administrative and signal services which were able to maintain, move and control the G.A.F. on interior lines within Europe. It ensured a highly flexible force able to concentrate at the right place and the right time. Moves from France to Sicily, the Balkans, to Norway, or to the Eastern Front took place in a matter of days.

At the end of 1941 the G.A.F.'s and Goering's prestige again stood high as war-winning factors: it was good enough; a period of complacency had arrived; the G.A.F. was wonderful. Goering sat back with a smile. The possibilities of the British, U.S. and Soviet aircraft industries and their air training schemes were not foreseen by the German High Command. Immediate steps were not taken by Udet and the German Air Ministry to increase their fighter strength, improve their fighter range, improve their naval co-operation, and organize a fighter command for Home Defence—except, of course, the night-fighter defence which, in the face of increasing Bomber Command effort, had been forced to develop from the Summer of 1940 onwards. A careful study of the Battle of Britain would have brought out these lessons; but there appears to have been no trained staff to make the study. There was a keen air intelligence staff, but they failed to sell their information to Goering. There was no strategical air reconnaissance force to find out what others were doing.

### THE BATTLE OF BRITAIN

To go back to the Battle of Britain: why did the G.A.F. not win it? They had a big force—2,600 good aircraft with heaps of reserves; they were flushed with three victorious campaigns and their morale was very high. The operational direction was right at the start. Goering's tactics were to clear the R.A.F. from its airfields or from the air, with a small subsidiary effort directed on aircraft factories, food supplies and the Channel ports; the latter target was probably included as an after-thought as being useful short range practice for the Stukas. But there was blind optimism, over-confidence, and lack of good intelligence about our fighter command organization.

They opened the offensive, Adler Tag (Eagle Day), on 13th August with 485 bomber sorties and 1,000 fighter sorties, and had some success at first when sheer weight of attacks temporarily cleared Fighter Command off a couple of airfields in Kent and a small unescorted bomber attack launched from Norway took a heavy toll at a bomber station at Driffield in Yorkshire, although Fighter Command saw that few of this latter attacking force got home. But that was as far as the G.A.F. got. To their amazement, they found that however they directed their raids, sometimes concurrent attacks from three or four directions at different areas in the South and South-East, the attacks were all engaged by our fighters. They soon discovered that unescorted bombers suffered crippling losses and that Stukas could not survive at all. They found, too, that their fighters had not sufficient endurance to escort their bombers to London and back if they were engaged and had to fight for it. They also began to realize that our fighter pilots were a well trained meat of high

morale and good shots, brilliantly led and mounted, and brilliantly controlled from the ground to intercept raids. The first plan—to clear the R.A.F. airfields South of the Thames in four days, failed. The R.A.F. never seemed to wait on the ground to be attacked but had to be fought in the air and defeated by a battle of attrition. The G.A.F. thought they had sufficient numbers for this and their plan envisaged the elimination of the R.A.F. in four weeks.

The battle went into its second phase: fewer bombers, more escort fighters, and eventually no bombers and all fighters, with a few bombs tied on, and finally fighters alone on sweeps at over 30,000 feet.

The battle was over. The G.A.F. had had severe losses and Fighter Command was again functioning from all its airfields. The G.A.F. fighter losses were more than they could stand, especially as the R.A.F. showed little sign of exhaustion. Kesselring held a high level conference at the Hague in the early days of September. He said the R.A.F. was out, Sperrle said it had 1,000 aircraft left. The C.I.O. said 350!!

What was then wrong with the G.A.F.? There was no lack of courage on the German side, and attacks were resolutely pressed home in spite of losses; but it was an unbalanced force for such a campaign, the implications of which, in the blind optimism prevailing, had not been studied. It had too many bombers and too few fighters, and the latter were of insufficient range, while nearly all aircraft were unarmoured. The G.A.F. had no clue to our Radar warning system. They were also handicapped—and that was to happen again more than once—by the interference of Hitler at a critical moment. The original plan was to destroy the R.A.F. aircraft on the ground by bombing their airfields. Halfway through the battle the object was changed. Hitler was irritated by the first R.A.F. night-bomber raid on a Berlin suburb on 27th August, and for revenge ordered, on 2nd September, the G.A.F. bombers to avenge themselves on London. The attack began on 7th September by day and by night, and this course of action continued until heavy loss to the bombers coupled with insufficiency of bomber escorts would not allow them to come by day, and then it continued by night. Attacks on airfields ceased.

One can almost say that the Battle of Britain, in German eyes, continued through the Winter of 1940-41 and terminated in the middle of May, 1941, when the bomber force was called off to switch over to the Eastern Front for the invasion of Russia. This Winter night campaign mainly directed against London was "Goering's war." It was ill directed and had no settled plan behind it, for London had shown in September that it could "take it" and that there was no hope of Britain capitulating as had other Governments after threats of terror bombings or attacks such as those on Warsaw and Rotterdam. A concentrated raid with the object of bombing London into submission was made in the full moon of October, 1940. For four nights, 300 bombers came; but the bombs were too small and, though sea mines were parachuted to step up the damage, London did not submit.

The G.A.F., although not trained for night strategic bombing, carried out their attacks well, as London, Coventry and other towns knew to their cost. Their "beam" bombing caused us an unpleasant shock; but there was no continuity of plan. There was a new plan in November—London first, then Coventry, Birmingham and Liverpool and the Rolls engine works at Glasgow were attacked. Later it was ports, as they were easier to find at night after we had countered the "beam,"

and it was the turn of Bristol, Plymouth, Swansea, Cardiff and Hull. The heavy blitz on London on 10th and 13th May, 1941 was a "cover" for the departure of the force to Russia.

There were other cracks in the G.A.F. edifice that showed up in 1940 and 1941. Our night bombers were flying pretty freely over Western Germany. They certainly had heavy *flak* to contend with round important targets, but the lack of a centrally controlled night fighter organization was apparent and had to be produced in a hurry.

Again, though it was realized by the Supreme Command after the Battle of Britain that Britain could probably be defeated only if she was starved out, there was no trained anti-shipping strike force to work in with the German Navy to this end. There was a delay in getting such a force started and there was constant friction with the Navy. The G.A.F. missed a great chance; and when they did get something going, it was too late. By the Summer of 1941, our merchant shipping had the necessary antidotes to the unescorted lone bomber, and the G.A.F. had no good long-range fighters. Again, in the Spring of 1941 there was a half-hearted strategic bombing attack on Egypt. But the plan of attack was changed nightly; first Alexandria, then a few mines in the Canal, then R.A.F. airfields, then Suez, etc.

#### THE TURN OF THE TIDE

With 1942 came the turn of the tide. The G.A.F. were extended; they could now nowhere give a complete "umbrella" to their Army. They were wanted on the Norway front, the Atlantic and Channel Coast front, the long Russian front, the Balkan front, the Cyrenaica front, the home defence front at night, and the Western front, while the R.A.F. fighters could not be allowed to range freely over France and Belgium. Bomber Command were stepping up their raids. Coastal Command were hampering the U-boat movements to and from the Biscay coast. The American and Soviet air forces were building up in Europe. The G.A.F. was not big enough. The shortage of fighters that showed up in the Battle of Britain was still there. The night fighter force had of necessity to be increased. The 100 per cent. reserves of aircraft and crews with which the G.A.F. had started the War was expended. The period of complacency of 1940-41 was having its effect. The speed up in fighter production was not enough. The German Air Ministry had not the wonderful foresight that produced the Empire air training scheme.

Worse was to follow at the end of 1942, and in the Spring of 1943. The Afrika Corps was in full retreat, short of petrol and *in extremis* in Tunisia. Likewise a German army was surrounded at Stalingrad. Hitler and the Supreme Command ordered the G.A.F. to carry petrol and supplies to those beleaguered forces and, at the last, to evacuate them. This operation had to be carried out at any cost. The cost was literally hundreds of Ju-52 transport aircraft, hastily converted bombers, and long-range Atlantic bomber-reconnaissance aircraft with their experienced crews. The G.A.F. flying training schools had to give up numbers of their advanced training aircraft and experienced instructors, which they never saw back. Goering himself has stated that the Stalingrad and Mediterranean operations at the end of 1942 and early 1943 were the death knell of the G.A.F. bomber force. He was quite right.

Further heavy bomber losses were incurred in the Baedekker raids on England in April-May, 1942. Hitler, irritated by Bomber Command's successful mass raids on

Lubeck and Rostock in March and April that year, switched bombers from anti-shiping and minelaying duties, and further increased the force with valuable instructional crews and aircraft from the operational training units. He said that he would take *Baedekker's Guide* and mark each city in it as it was destroyed. Exeter, Bath, Norwich, York and Canterbury suffered, but so did the G.A.F. training scheme and the support given to the German Army on the Russian front. Here the shortage of escort fighters and the vital necessity of a big bomber operational effort in support of the retreating and surrounded German Army caused heavy casualties to the G.A.F., as did the big air attack on Malta carried out from Sicily in the Spring of 1942, regardless of loss, preparatory to an airborne invasion. This air attack was called off at short notice and the air force switched to the Russian front. But the losses had been very heavy and were mounting on all fronts. Again the Allied Algeria landing of November, 1942 entailed a further extension for the G.A.F. The South of France and Sardinia had to be occupied and the air attacks on the Arctic convoys had to be abandoned. The Russian front had to be denuded of aircraft again. The G.A.F. was over-extended and aircraft and crews would not go round.

#### THE G.A.F. ON THE DEFENSIVE, 1943—44

In 1943, R.A.F. Bomber Command forced the G.A.F. to form its first "functional" command. Air Fleet Reich was charged with the air defence of Germany. Our night attacks were taking too big a toll. The United States 8th Air Force had commenced its attacks in daylight, but it was not till the Summer of 1943 that the G.A.F. realized what these attacks were going to mean for them. There were demands for an ever-increasing number of day and night fighters. Production was speeded up of M.E.-110, and the J.U.-88 was called in to help to an increasing extent and eventually became the main night-fighting weapon. But this increasing task of the J.U.-88 was all at the expense of the bomber force, which accordingly could not be held at establishment strength. In the Summer of 1943, consequent upon the evacuation of Tunisia, the G.A.F. was bombed out of Sardinia and Sicily with very heavy losses and its Mediterranean contingent was nearly inoperative when the invasion of Sicily took place; it had little or no reconnaissance force and could provide no adequate counter-invasion force.

Things were little better on the Eastern Front. With a shortage of fighters, and what there were spread over the long front, local superiority could only be obtained by a concentration. This left a lot of the line uncovered and the Soviet air force "coming again" had a free run. A half-hearted attempt was made to bomb the Soviet industrial area around and to the East of Moscow, but it was too small and, when planned to expand, the German Army was in retreat and the targets became out of range of G.A.F. airfields.

The G.A.F. began, late in the year, to fall into discredit among its own people and lost confidence in itself and its ability to stop the bombing of the Reich. In addition to the strained relations with the Navy, relations between the G.A.F. and the Army deteriorated. Goering's prestige declined, and the lower levels of the G.A.F. began to lose confidence in their superiors and the High Command; they felt that there was no co-ordinated plan and that Hitler would not listen to Goering or Milch, but to Speer, to a young pilot, or to a self-styled expert of the S.S. It was in 1943 that Jeschonnek, Chief of Air Staff, and Udet, Chief of Supply of the G.A.F. committed suicide.

In 1944 things only got worse. Just when the night-fighter defence was again getting into its stride after the "window" reverses of 1943, and having considerable



success against Bomber Command's deep raids into Germany, the day raids of the 8th and 15th U.S. Air Forces, accompanied now by their escort fighters, began to get into their stride with their heavy attacks on aircraft production factories and oil. The appearance of the U.S. long range escort fighters, Mustangs and Thunderbolts, over Berlin took the Germans by surprise. At first they would not believe it, until the German C-in-C. Fighters watching an air battle in his own aircraft was chased. When at last he was convinced, Goering remarked that the War was lost.

Every priority was now given to the production of fighters, and the bomber force to all intents and purposes was scrapped. Fighter production was doubled—a big achievement in view of the dispersed state of the industry that our bombing had caused. The aircraft produced were of the well tested F.W. 190 and M.E. 109 types. The pilots, although now poorly trained, showed the greatest determination and fighting spirit. By the end of June, 1944, two thirds of the G.A.F. fighter force was defending the Reich from West, North and South. Still the Allied bombers came by day and night, and one synthetic oil-plant after another was shattered.

#### THE INVASION OF NORMANDY

A word must be said here on the G.A.F.'s failure to hinder the invasion of Normandy. There was a plan but, as before, it was dislocated first by Hitler and later by Allied bombing attacks. It was planned to have a force of nearly a thousand aircraft—"ship strike" and bombers, and an Air Corps was brought North from the Mediterranean. But that plan was never realized owing to the interruption of the bomber programme in favour of concentration on fighters and to frittering away the bomber force in the night raids on London and other English cities between January and April, 1944. This misemployment of the anti-invasion force was by order of Hitler for reprisals, and for home propaganda. The two hundred odd bombers remaining in April from the original 550 at the beginning of the year carried out raids on a small scale against the invasion ports of Portsmouth, Southampton and Plymouth, but navigational aids were interfered with by our radar counter measures and attacks were half-hearted and not pressed home. The "ship strike" force, seriously reduced in the Mediterranean fighting of the Winter of 1943-44, could only recover to a strength of 200-250 aircraft, making a total force of 400-450.

History will, I think, record their complete failure to fly reconnaissances during those last pre-invasion days as the G.A.F.'s biggest failure. If ever reconnaissance needed fighting for, surely it was then. The fact is that the necessary aircraft were there, in France, but the spirit had gone and the R.A.F. succeeded in stopping any reconnaissance but an occasional cover of eastern Channel ports.

The disposition of the G.A.F. fighter types in the West on D-day is of interest. There were only 155 fighters and 75 fighter-bombers in France, Belgium and Holland. The rest were protecting the heart of the Reich and on the Eastern Front. Their D-day sorties were less than a hundred for fighters, and the night bombers and "ship strike" force, which Goering had called "the spearhead of the anti-invasion forces," flew 175 sorties with little effect due to untrained crews and Allied night fighters. Losses in this force were heavy, quite a number being due to their own *flak*. In the days immediately following D-day, the G.A.F. in France was reinforced by 400 aircraft, and a peak sortie rate of 500 day sorties and 200 night sorties was reached, but quickly faded due to Allied attacks on their airfields. By July the G.A.F. was spending most of its time in the West in attempting to defend its own airfields.

August, 1944, was the black month for the G.A.F. On 11th August, owing to fuel shortage, restrictions were ordered on all flying activities other than those operations connected with the interception of raids penetrating into Germany. There had been cuts in training and transport flying, but never before for operational flying. From this day, the G.A.F. in the West was practically eliminated as a factor of military importance in land operations.

In September, 1944, the single-engined fighter force had increased to nearly 2,000, under a fifth of which were on the Eastern Front. There were also 900 twin-engined night fighters. At this time, 70 per cent. of the whole G.A.F. was attempting unsuccessfully to protect its oil industry. But the efficiency of the G.A.F. was dwindling rapidly. While in June, 1942, the G.A.F. could keep up a sortie rate of 1,800 a day with a front line strength of 4,800 aircraft, in June, 1944, the front line air force had risen to 5,500 but the sortie rate had dropped to 1,300 a day. And the sortie rate due to poorly trained aircrews was operationally half as effective. For example on 21st November, when the U.S. 8th Air Force attacked Merseburg, 700 fighters rose to intercept; of two formations of these, one of 170 and one of 180 who intercepted the raid, only 6 and 30 respectively actually pressed home their attack on the bombers.

Lack of training, lack of fuel, lack of serviceability, unreliable engines, airfields bombed out or shot up, all had their effect, and though the numbers were there, fighting efficiency was not.

#### AIRCRAFT PRODUCTION IN GERMANY

The German aircraft industry was in a healthy state at the beginning of the War. But even after the Battle of Britain it remained on a pre-war production level. A short war was expected and it was not till 1941 that expansion was started, and not till the end of 1943 that a real effort was made to produce day fighters in sufficient quantities. Great difficulties were encountered by Milch, Director-General of Supply at the time, to step up fighter production, and he carried out his programme behind the back of Hitler and Goering who were still shouting for more bombers and more transport aircraft to assist the German Army on the Eastern front; and this with their base of supply—the German towns and industry—falling in ruins behind them.

Of the types of aircraft in the G.A.F. in 1942, only one successful new model was subsequently produced in numbers—the F.W.190. The Germans, in general, finished the War with modified models of those with which they started. We are told that the reason no four-engined bombers were put into big production was that they would be no use for the day support of their armies. When they saw the need for long-range heavy bombers later it was too late, and all production was then concentrated on day and night defence fighters. Time and again, the heads of the G.A.F. Air Ministry called to Hitler and the O.K.W. for more priority of the country's industrial effort for aircraft production for home defence. But they could not get it until July 1944, when Allied bombers had already virtually destroyed their fuel industry. Priorities went according to Hitler's whims, and tanks, U-boats and guns came before aircraft almost till the end of the War.

With regard to jet aircraft production, the M.E. 262 was developed in 1937 and the first operational type was flown in 1941. But it was rejected by the German Air Ministry in their complacent period. It was not till the first U.S. 8th Air Force

daylight raids in 1943 that production was restarted. The first output of ten jet aircraft arrived in April 1944, the output rising to 60 in July, 1944. But there was much delay in putting them to their operational role. Against all advice, Hitler insisted that they should be used as bombers, and it was only by stealth and behind Hitler's back that the C-in-C. Fighter Command managed to get 50 into operational fighter units in October 1944; and not till March 1945, did Hitler allow all jet production to be used for fighters. He then put an S.S. General in charge of jet units and crews!

But even in the Autumn of 1944 it was too late to make the full operational use of the jets that they deserved. They did, however, bring reconnaissance results to the German Army on the Western Front for the first time since before the invasion. The pilots had not time to become properly trained, casualties were heavy in training, and the short time available never allowed the jet units to arrive at the operational pitch expected or worthy of them.

### THE FUEL INDUSTRY

The failure of the G.A.F. to protect the German fuel industry was a resounding failure, which in the end, besides grounding the air force, immobilized the Army and Navy. In modern war armed forces that cannot move swiftly to attack or to meet attacks have little hope of success.

The history of the German fuel state is interesting :—

- 1939 Stocks were up to strength owing to large pre-war imports and there was a three months reserve, but home production was inadequate.
- 1940 Consumption was less than planned.
- 1941 Certain consumption limitations were imposed in the Spring (not on the G.A.F.) to build up stocks for the attack on Russia.
- 1942 Unexpected demands on the Eastern Front coupled with Rommel's campaign caused a crisis. G.A.F. reserves were down to two weeks. Slight limitations were put on G.A.F. operations in the West, but definite cuts were made in the allowance for Training and Air Transport.
- 1943 The situation eased in the Spring with the production of synthetic plants at their peak. But a crisis again occurred in the Summer with better weather and more operational activity. G.A.F. operational activity was maintained but at the expense of training. A.O.C. Training asked for 50,000 tons a month, but only got 30,000.
- Winter 1943-44 The position improved. Bad weather curtailed flying and stocks doubled. Synthetic plants production improved.
- 1944 In March 1944, fuel position was as good as in 1940.
- 1944 In May, the Allied air offensive on synthetic plants was opened by the U.S.A.A.F. 8th and 15th Air Forces and R.A.F. Bomber Command, and by June, 90 per cent. of production had been put out of action, and it fell from 195,000 tons in May to 7,000 tons in August. Accumulated reserves kept the operational effort going till August, but not the flying training. August was the black month with unrestricted flying allowed only to the day fighter force in operations against raids. In November many units of the G.A.F. were grounded for lack of fuel, but owing to a certain cessation of our bombing a little fuel was built up for the Ardennes offensive. In December the final phase of the Allied air attack on fuel was started and completed with great success and accuracy.
- 1945 In the Spring all remaining stocks were exhausted and the G.A.F. was grounded.

It will be seen from this short summary that the G.A.F.'s difficulties due to fuel shortage began in the Summer of 1942 and increased to the end of the War, and it caused a constant limitation in flying training hours. In September, 1944, fighter production was at its peak at nearly 3,000 a month, but aircraft were being delivered to operational squadrons without makers' flight tests owing to shortage of fuel. The result was unreliable engines. Again, to be an efficient fighting instrument, an air force must be in the air; both aircraft and pilots function better if they are in use, whether or not on actual operations. This practice flying was denied to the G.A.F. for the latter part of the War.

One might say that when the G.A.F. fighter production arrived at its highest in 1944, there were enough to have defended their vital oil supplies had they had the well-trained pilots and the ample fuel supplies of two years earlier.

### THE TRAINING SCHEME

One cannot conclude without a word on the failure of the G.A.F. flying training scheme. I think it would be fair to say that in 1939, 1940 and 1941 the G.A.F. air crew were a well trained, competent body of men; our Battle of Britain pilots would say so. They may have been ill directed and ill led, but they could handle their aircraft well and pressed home their attacks relentlessly in spite of heavy casualties. The same could not be said in 1943 or 1944, though of course there were exceptions.

The failure, I suggest, must be put down to the policy of the German Air Ministry which, when casualties became heavier in 1942 and gaps had to be filled, ordered the training schools to concentrate on quantity at the expense of quality.

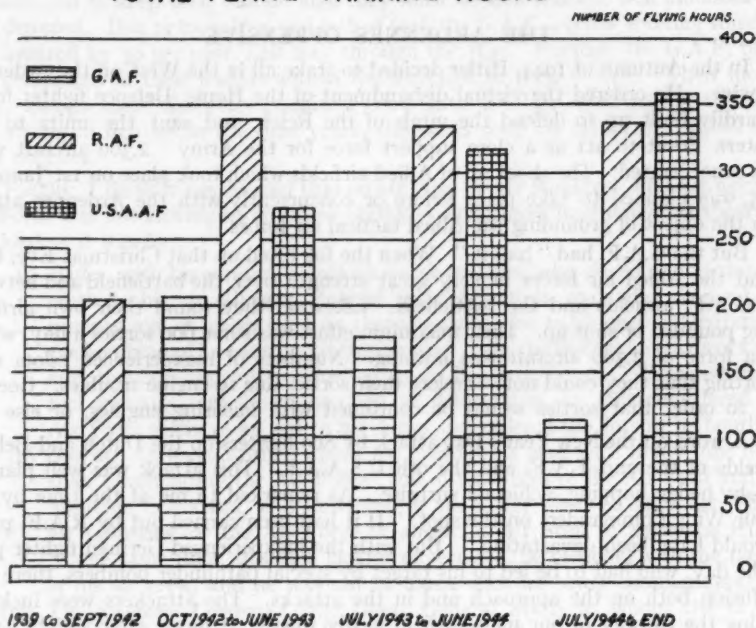
Until early 1942, fighter Wings had each a spare reserve squadron for holding and polishing immediate reserve crews. These units were disbanded just at the time that the R.A.F. in the field were, as a result of experience, initiating similar units. Bomber crew training was contracted that Summer due to temporary shortage of fuel. Thereafter, the flow of pupils through the schools became uneven, and was made more so at the end of the year when instructors and aircraft of the advanced training schools were withdrawn to augment the air transport services at Stalingrad and in the Mediterranean. Hitler ordered it and Goering would not oppose him. These aircraft and crews did not return and matters went from bad to worse. There was a pile up of elementary pupils, and many of these went direct to operational units where there were not proper instructors or aircraft to compete with them.

In 1943, the output of pilots and crews was nearly 10,000—double the output in 1942, but the quality was probably not half as good. There was a shortage of operational type aircraft in the schools. In 1943, the advanced fighter training schools were at half strength in operational types of aircraft. Bomber schools were nearly as bad. The front line was given all the new production and the crews continued to be turned out of the schools, but with half the experience.

There was a shortage of instructors in 1943 which was never made good. There was the fuel shortage in 1943 and 1944. Night fighter pilots went into action with half the flying hours of our own; day fighter pilots with even less than half. Training establishments were being "shot up" by U.S. Mustangs and Thunderbolts with consequent shattering disorganization.



# GERMAN AIR FORCE TRAINING TOTAL FLYING TRAINING HOURS



## FIGHTER TRAINING HOURS

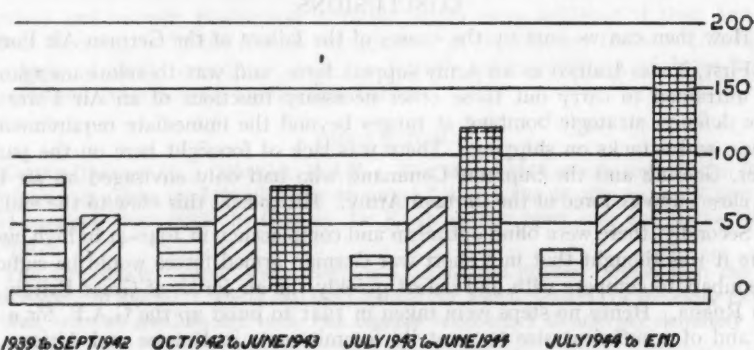


DIAGRAM II

In 1944 the training organization had sufficient operational type aircraft again. They were turning out 900 fighter pilots a month, but of what quality? The chart of flying training hours tells its own tale.<sup>1</sup>

### THE ARDENNES OFFENSIVE

In the Autumn of 1944, Hitler decided to stake all in the West on the Ardennes offensive. He ordered the virtual disbandment of the Home Defence fighter force, so tardily built up to defend the vitals of the Reich, and sent the units to the Western Front to act as a close support force for the Army. 2,300 aircraft were thus concentrated. The shoot up of Allied airfields which took place on 1st January, 1945, was planned to take place before or concurrently with the Ardennes attack with the object of grounding the Allied tactical air forces.

But the G.A.F. had "had it." When the fog lifted on that Christmas Eve, they found the Allied air forces in very great strength over the battlefield and between the G.A.F. airfields and the battlefield. Likewise, they found their own airfields being pounded or shot up. Their maximum effort was some 600 sorties a day, which for a force of 2,300 aircraft was nothing. Numbers of inexperienced pilots were reporting that they could not complete their sorties due to engine troubles. Goering had to order that sorties would be continued with misfiring engines, or else — !

A word on the New Year's Day attack by 800 fighters on the Dutch and Belgian airfields of the 2nd T.A.F. and the 9th U.S.A.A.F. This attack was well planned and, by hedge hopping, achieved surprise. As remarked to me at the time by one of our Wing Commanders on the spot, "If it had been carried out by R.A.F. pilots it would have been devastating." But with the inexperienced German fighter pilot of the day, who had to be led to his target by special pathfinder bombers, there was confusion both on the approach and in the attacks. The attackers were lucky in finding the runway of our main airfield newly frosted at dawn after a night's rain, and our aircraft unable to take off. The R.A.F. lost some 140 aircraft on the ground, which included a good percentage of non-operational types (the whole of the 2nd T.A.F. communications wing and ambulance aircraft). The G.A.F. lost 220 picked pilots and their aircraft. After this attack, the remnants of the G.A.F. fighter force were ordered to the Eastern Front and the G.A.F. fighter commands West and Centre were disbanded.

### CONCLUSIONS

How then can we sum up the causes of the failure of the German Air Force ?

First, it was trained as an Army support force, and was therefore unorganized and untrained to carry out those other necessary functions of an Air Force i.e., home defence, strategic bombing at ranges beyond the immediate requirements of armies, and attacks on shipping. There was lack of foresight here on the part of Hitler, Goering and the Supreme Command who had only envisaged an air force as a close support force of the German Army. Hitler held this view to the end.

Secondly, there were blind optimism and complacency in 1940-41 in high circles, where it was thought that in a short war German armed forces would be sufficient in numbers to compete with and defeat quickly the air forces of Great Britain and then Russia. Hence no steps were taken in 1941 to build up the G.A.F. for a long war and of a sufficient size to meet its commitments in Europe and Africa. For the last three years of the War it could establish ascendancy nowhere.

<sup>1</sup> See Diagram II.

Thirdly, operational pilots and aircrew are probably the most highly tempered weapon in war. Theirs is a dangerous and lonely existence. To get the best out of them and to keep their morale high they must be well trained, well mounted and well directed. Due to casualties and lack of fuel, the G.A.F. aircrew training standard was lowered by 50 per cent. half way through the War. Further, the G.A.F. pilots lost confidence in their leaders and in the direction of their C.-in-C. Their morale sank, though their discipline remained good until the last, and though the force was strong in fighters in the final years, the pilots were no match in combat with their enemies.

Finally, I think it can be said that no air force or Air Ministry—and the German Air Force was not lacking in brains or ability—could have functioned satisfactorily shackled as it was by:—

- (i) *Hitler*, with his corporal's outlook on air matters, who if told an unpalatable truth by his air advisers, dubbed them defeatists, and who changed the planned aim of his air force on three occasions due to his personal irritation: the bombing of London on 7th September, 1940, the Baedekker raids of 1942, and the bombing of London again in February, 1944. Even when his fuel industry was being bombed to destruction, he still considered the Air Force solely as an aid to his Army and ordered the Jets to be bombers.
- (ii) *Goering*—Always worried about his prestige; a man with many jobs other than commanding the Air Force; full of jealousies of the Air Staff and the Supreme Command, and unwilling in the latter years to approach Hitler for priorities for the Air Force or allow his Air Staff to approach Hitler. At the same time, although lacking experience, he meddled with the tactics of his air crew, and he was out of touch with his lower commanders.
- (iii) *The Supreme Command* (the Great General Staff) to whom the G.A.F. had to go for its overall plans and priorities in manpower. The G.A.F. had next to no representation and the Staff had no experience and little understanding of the problems of modern air warfare. This Staff, though warned, failed to foresee the oncoming clouds of bombers and escort fighters that were to destroy the German fuel industry and so immobilize all their armed forces.

On reflection, one wonders what the German Air Force, coupled with the German scientists and aircraft production factories, might have achieved if they had had as their directing body the British organization of the Cabinet Defence Committee, the Chiefs of Staff Committee, and the latter's sub-committees of Inter-Service Planners and Inter-Service Intelligence teams.

#### DISCUSSION

GROUP-CAPTAIN H. J. WILSON, R.A.F.: You stated that at the time of the Battle of Britain our pilots were "brilliantly mounted" and I should like to know how you would compare them with the German Air Force at that time, and during the rest of the War.

THE LECTURER: The German had not an eight-gun fighter. Other than the lack of the eight-gun fighter, I would say the German Air Force fighters, in the early days of the War, were as good as our own. As regards bombers, I should say definitely they were better.

I think that throughout the War we may have kept a little ahead of them; but very little. I think the fighter pilots would say the same—there is probably someone here who could say better than I—but their Focke-Wulf 190 was as good material as our own.

In general, I think they kept very level, and our superiority was due in the main to training and control, but I should like to hear what Air-Marshal Coningham has to say on that.

CAPTAIN E. ALTHAM, R.N.: The Lecturer remarked that the relations between Goering as Head of the German Air Force and the German Admiralty were not good. Could he enlarge on how those relations affected the strategical use of the German Air Force for sea targets generally, more particularly attacks on Allied shipping? Was that directed by Goering, or by the German Admiralty, or was it a case of "pull devil, pull baker"?

THE LECTURER: The Germans started the War with a small Naval Air Force—a certain number of old flying-boats, but really nothing very much. Then Goering decided there were good opportunities for one of his bomber groups in anti-shipping operations. He had all this Group specially trained for North Sea operations: it was used in the attack on the Fleet at Scapa Flow; it was used in the attack on the Fleet in the Firth of Forth, and for North Sea operations generally. It became expert in attacks on shipping but was more or less outside the control of the German Admiralty. In the 1940-41 period, the German Admiralty saw in this "ship strike" force something that could hit better than the old flying-boats they had been palmed-off with, and they tried to get control of it; but Goering would not let it out of his hands, and there was friction.

Later, when the Germans established their submarines in Brest and on the Biscay Coast, they realized the great advantage of having a close tie-up with the German air reconnaissance force which was flying round Britain between Norway and Brest. Some sort of local headquarters was fixed up at Brest. But though I believe the sailor and the airman got on fairly well there and saw the object in view, they did not combine at headquarters in Berlin. There was always bad co-operation between the two.

COLONEL SIR W. H. D. ACLAND: Could we hear any view on the higher German strategic policy behind the V1 and the V2?

What was the connection between the production of V1 and the V2, vis-à-vis production of aircraft for the German Air Force?

THE LECTURER: The German Air Force was not concerned in the slightest with the V1 and the V2. It was a special line of the German High Command: nothing to do with the Air Force, and very little to do with the Army. It was a private line. Both suffered from it. The German Air Force from 1942 onwards, when they did not show very great success, continually had their manpower cut for the benefit of the 'V' weapon campaign. The German Navy's manpower was also cut for the benefit of this campaign, for which a very big organization was necessary.

I think it may have been Hitler's idea that the V1 would take the place of bombers, but that has not come out in any way in the talks we have had with Goering since the War, or in interrogations. It was an additional weapon intended to frighten us into surrender, quite outside the normal German Air Force.

MAJOR W. H. CADMAN: May I ask whether the quality of the aviation spirit used in the German planes was equal to that used by the Royal Air Force?

THE LECTURER: I am no technician, but I have always understood that they never suffered from a lack of octane fuel. The Russian Air Force did: throughout the War their supplies of the highest octane, and of all spirit, were always short.

The Germans had the best octane, and what they gave to their fighter aircraft was as good as we supplied to ours.

MAJOR W. H. CADMAN: Did that also apply to the lubricating oil?



THE LECTURER: In the early stages of the War, when I was in Intelligence, we used to get quantities of their lubricating oil from crashes sent to London for investigation, hoping it would be of poor quality, but I do not believe it was ever found to be anything but the best.

LIEUT.-COMMANDER A. F. PATERSON, R.N.: What was the operational experience of first-line Wing-Commanders and their pilots about 1944?

THE LECTURER: I remember reading one story from a German Fighter Group Commander in the Field at the time of the Normandy invasion, when he said he had only one pilot with over six weeks fighting experience in one of his Wings, and practically none of his other Wings were any better off; their leaders had been killed off. You would have found a Wing Commander with only six weeks operational experience leading a Wing.

German air leaders were killed off early in the War and the G.A.F. did not pull out experienced leaders and send them back to the schools, with the result that, eventually, operational experience was not available anywhere.

#### THE CHAIRMAN

There is no doubt that the weapon of German air strength was intended to be used as a bludgeon to subdue as many countries as possible, either by threat or by action. Until it came up against the Royal Air Force this weapon was quite successful.

The fabric of German air defeat will bear constant study. I would suggest that the weave started with the German defeat in 1918 because this event was followed by a break of almost fifteen years. As you have heard from the Lecturer, with a highly-tempered weapon like an air force there must be continuity, especially in development, and this break in German air action and air thought was a severe penalty.

From the early 1930's the German rushed to learn all he could. We helped him considerably at our Hendon display each year by showing him our latest flying and our most up-to-date equipment. I think he learned much from us. He also learned from the Russians the idea of large numbers of airborne forces and parachutists, with the result that he started the war in 1939 with an extremely good day air force, perhaps even better-balanced than ours because he had large transport resources which we had not. Then came the twin factors which turned out to be a real disaster for him: first of all his intention to organize for only a short war, and secondly his great successes for the first two years of the War. These two things in combination caused him not only to sit back but upset all his air thought and made him think he had all the air answers.

So the Germans went on until 1942, when Hitler, who had no air sense, took over all command. By being made into a godlike creature and not allowed to be advised or criticised he made the expected mistakes—you have heard the remaining part of the story and the result. These factors I have just mentioned are to me the high-lights of the pattern of defeat.

There are one or two other points. The German did not think of air operations at night, which was a very great failing, because war goes on for 24 hours of the day and in the Northern hemisphere darkness is about half the day. Both sides made mistakes—his mistake of not using the night—our mistake, perhaps, of keeping on the .303 machine gun—you can imagine how serious would have been the result if the German had developed a really first class night fighter defence, or even one like ours in 1940, while we continued to use a weak defensive armament on our heavy bombers.

Then finally we had the picture of the German scientists frantically producing new weapons in the most incredible way right until the end of the War. This factor made the German war dangerous almost right to the end, for with all the bombardment and the wear-and-tear and worry of being attacked from all sides, they still put up a performance which was quite superb in the way of producing air equipment and technical ideas.

Before concluding, I can perhaps help with the point raised in discussion about the technical difference between the enemy's fighter aircraft and ours. I have always felt, and experience has confirmed, that there was a great difference in the spirit in the air between the German and our own pilots or the pilots from the United States. The Germans have not somehow a real air sense and although throughout the War we were technically neck-and-neck, I think the key is that the British or American pilot, once he is airborne, has quite a different dash and spirit from the German pilot, no matter how skilled.

I am sure we have all been most interested this afternoon and I do, on behalf of us all, most warmly thank the Lecturer for coming and talking to us.

The customary thanks to the Lecturer and Chairman were conveyed by acclamation.

## THE ROYAL NAVAL VOLUNTEER RESERVE AND ITS FUTURE

By CAPTAIN T. D. MANNING, V.D., R.N.V.R.

IT has always been said that the British people have the sea in their blood ; we take naturally to the sea and there is no fear of the Navy ever being short of recruits in time of need ; between 1939 and 1945 hundreds of thousands of young men and women who had never had anything much to do with the sea joined the Navy, learned their work in a remarkably short time and quickly became valuable members of a great Service. Everyone knows this and it is a comforting thought to those who plan for the future. But there is one great danger attached to it : there are those who imagine that the Navy can always be brought up to strength in a short time merely for the asking and that volunteers will always be available to man the fleet and its auxiliaries. This is, in part, a fallacy.

In time of emergency the Navy is brought up to strength and put on a war footing by its Reserves. Retired officers of the Active Service, the Royal Fleet Reserve, pensioners, officers and men of the Royal Naval Reserve and the Royal Naval Volunteer Reserve are mobilized and, if the planners have done their work properly, the Reserve Fleet should be ready for sea (as far as man-power is concerned) and there should be enough officers available to open up new bases. It must be remembered, however, that the number of Retired officers available in 1939 was greater than it is likely to be again on account of the large number of officers compulsorily retired under the Geddes Axe of 1922. Owing to the policy in the late war of expanding through the R.N.V.R. there should be no necessity for another Axe. The R.N.R. was always a small force and the possibility of increasing it in time of peace depends on the good will of the shipping companies. It is possible that it may not be as large as it was in 1939 for it is natural that the companies should be unwilling to lose some of their best officers and men when war comes. This, however, is merely conjecture.

We now come to the R.N.V.R.—that small body of enthusiasts which has become swamped, in public opinion, by the host of temporary officers and hostility-only ratings who have served in the Navy during the War. Closely allied to the Permanent R.N.V.R. were the members of the Royal Naval Volunteer Supplementary Reserve—gentlemen who had offered their services in case of war but who received no training in time of peace. Many of these were commissioned soon after war started and, after very sketchy training—only a matter of days in some cases—were sent to sea. It is well known that many of these officers had done what they could to train themselves at their own expense without any official encouragement whatever ; indeed, before the War, the whole system of training volunteer reservists was one of parsimony and there is every indication that this policy is still favoured and that the Treasury, at least, has learnt nothing from the last seven years so far as Naval Reserves are concerned.

It must be emphasized at this point that the temporary officers of the recent war, though termed R.N.V.R. and wearing the distinction lace of that force, were, in many cases, neither volunteers nor reservists. It was a major error of policy ever to allow this ; they were temporary naval officers, *not* reserves, and it would have been far better to have granted them temporary R.N. Commissions. It is very generally admitted that their work would have been made easier had they worn R.N. distinction lace whereas the true reservists, whether R.N.R. or R.N.V.R.,

had no need of such assistance. The work done by the temporary officers is beyond praise and the above remarks are not meant in any derogatory sense ; it is simply that the permanent reservist was intensely proud of his Service and was hurt that the Navy did not appear to appreciate the training he had put in during peace-time. When a large number of protective Commissions were granted, including some in the higher ranks, to Dockyard, Stores, Canteen, Naval Mail, and other officials, his humiliation was complete. Here then, is one thing that needs thought when the future of the Naval Reserves is considered.

In September, 1939, there were under a thousand R.N.V.R. officers of all branches, quite a proportion of whom were only recently entered so that the real establishment was considerably less. In the year before the War all Divisions increased their numbers so that the permitted establishment of just over 800 was increased by nearly a quarter. The number of ratings was just over 5,000 but this was excluding the newly formed Solent and Humber Divisions, and it is probable that the total number of officers and men of the R.N.V.R. mobilized in 1939 was about 7,000. A proportion of these were only partially trained.

It is important that a trained reserve should be available to man the Reserve Fleet on mobilization for the tempo of wars tends to quicken as time goes on and it is folly to rely on a quiet spell in which to train conscripts up to the necessary standard. Moreover, technical training is now more important than ever and officers and men must possess a far greater technical knowledge than was necessary seven years ago. It will not be sufficient for the Fleet to receive a number of enthusiastic amateurs without much knowledge of the weapons and devices they will be called upon to use. This is particularly vital when anti-submarine and anti-aircraft warfare are considered, for attack and defence in these arms are certain to begin as soon as war starts. The same may be said of minesweeping, as, with the advent of minelaying from the air, the sweepers must be ready to start work at once. Skilled communication ratings, radar operators and harbour defence personnel will all be needed immediately and there will not be time to train them all from scratch.

The R.N.V.R. will be called upon to supply all these and many others and therefore it would seem to be a simple matter to appreciate the importance of forming an adequate reserve in time of peace. That the Navy itself knows this is abundantly clear, but it has yet to be seen whether the Treasury is equally enlightened. From the recent announcements in the Press it appears that the Admiralty's efforts to form a bigger and better R.N.V.R. have failed, for the time being at any rate. One thing, however, which is encouraging is that the reconstitution of the R.N.V.R. is being started without the delay that followed the 1914-18 war, when two and a half years elapsed between the Armistice and the re-forming of the Reserve.

At present the R.N.V.R. is divided into the following Divisions for administrative purposes : Tay, Forth, Tyne, Humber, London, Sussex, Solent, Severn, Mersey, Clyde and Ulster. There are also Divisions overseas in different parts of the Empire, but it is with the British section that we must deal here. The Tay and Forth Divisions have been formed from the old East Scottish Division which was somewhat scattered ; the Humber and Solent were newly formed before the War. Each Division has been provisionally told off to specialize in one or more branches of the Service such as Gunnery, Communications, Torpedo and Anti-Submarine, Coastal Forces, Combined Operations and so on. With the limited numbers allowed by the pre-war establishment, however, the number of trained officers and men available will be exceedingly small in relation to the requirements of a general mobilization. True, for the next



ten years there will be a valuable reserve in the shape of the R.N.V.S.R. consisting of officers who have held temporary Commissions during the War. It must be realized that these officers receive no training whatever in peace-time and therefore their value decreases year by year as their technical knowledge grows rusty and fresh developments come along. To rely on their services is to take a short term view.

Up to 1939 it was generally thought in the Navy that there would be little or no use for the services of R.N.V.R. senior officers, and for a time it proved difficult to employ them; but as the War progressed an enlightened Admiral Commanding Reserves saw to it that promotion to Commander and Captain was not slowed down, indeed it was if anything stepped up, with the result that a number of experienced senior officers became available and were used to good effect in appointments which increased in importance as time went on. R.N.V.R. Commanders were to be found as Executive Officers of cruisers and in command of escort groups; Captains and Commanders R.N.V.R. were given command of shore establishments and important staff appointments, with the result that it is now well established that such officers are of a very definite value on mobilization and an increased establishment of Commanders is being pressed for. It is to be hoped that the Navy will provide a special course for senior officers (for which retired R.N. officers might well be eligible also) to fit them for service as Naval Officers in Charge of small ports and other shore appointments.

The pre-war R.N.V.R. lacked opportunities of ship-handling in their own Divisions and it was often difficult to get it when doing training with the Fleet in the days of "promotionitis," for commanding officers of small ships were naturally reluctant to bring their ships into the limelight through the mistakes of amateur ship-handlers.<sup>1</sup> A movement is on foot to give each Division a small vessel, such as a motor minesweeper, for use as a sea-going tender. The value of this innovation, if approved, will be very great to both officers and men. It seems a pity that "B" type M.L.'s cannot be added in order to train a nucleus of personnel for Coastal Forces. At present it seems likely that only one Division will be able to specialize in this form of warfare. New drillships are being provided and all instructional equipment is being brought up to date, although it is unlikely that any new buildings will be erected for many years to come.

What the effect of continued conscription will be is still very doubtful. It seems that the Territorials are contemplating having conscripts serving in their ranks after doing their compulsory service and it may well be that some similar scheme might be introduced into the R.N.V.R., although it would destroy the old volunteer spirit of which the force is so proud. Moreover, the present R.N.V.R. could not possibly cope with the numbers of men involved; a number of new Divisions would need to be formed all over the country, and such centres as Birmingham, Nottingham, Reading, etc., would become headquarters of large new Divisions. Such places could even now be opened up with advantage when it is considered how many officers and men have done excellent service even though they live in inland districts and have not been connected with the sea before joining the Navy. This is a point which is doubtless engaging the attention of the planners.

A point which is not generally realized, or was not in the days before the War, is that the workings of the R.N.V.R. were known to very few serving naval officers.

<sup>1</sup> Something on the lines of "Officer of the Watch Manœuvres" would seem to be the answer.—EDITOR.

The officer-instructors who were appointed to the R.N.V.R. Divisions used to be over-zone Lieutenant-Commanders who, though they did magnificent work for the R.N.V.R., did not as a rule go back to sea and spread their knowledge in the Fleet. Similarly, the Admirals Commanding were usually Flag Officers ending their careers, with the result that there were very few senior officers serving at sea who had any idea of what the R.N.V.R. could do. Both these points have received attention and are being rectified.

The R.N.V.R. had one very great advantage over the Territorials in that they did their training in the Fleet in small numbers, taking their own time and not going in a herd. They learned to live alongside their active service brethren with the result that their training was of very great value to them. The commissioning of a few ships of the Reserve Fleet every Summer would be of value provided they were used for Divisional training and not for Annual training. It is essential that officers and men should feel that they are taking a part in the ship's routine as members of the ship's company and not as a training class.

If, then, the R.N.V.R. is to be a reserve capable of fulfilling all the functions that seem to be required of it, it is plain that a considerable expansion will be necessary and the fullest use made of the large number of willing recruits among the temporary officers now offering their services. A number of these officers can only serve in the R.N.V.S.R. but there are many who are keen to play an active part in the permanent R.N.V.R. and who are most disappointed at the prospect of having to be relegated to the Supplementary Reserve. But, unless the R.N.V.R. is to be primarily an officer reserve, it is necessary to consider where the ratings are to come from to man the enlarged service visualized in this paper. In time it is possible that the required number of recruits might become available but this is not at all certain. To a volunteer officer of 25 years standing the idea of making the R.N.V.R. an instrument for the continued training of conscripts is naturally repugnant, but the possibility must be faced and the good of the Navy as a whole considered. A young man who has done two years compulsory training in the Fleet will be of little use in an emergency unless his training is continued after he returns to civil life, and it is a matter either of forming a new reserve for them or absorbing them into the existing scheme of things. There can be little doubt that the latter is the more economical alternative and, provided the R.N.V.R. does its work properly, many of these young men will be willing to sign on for terms of service voluntarily after their compulsory period is over. By this means enough men can be made available to man several inland Divisions, though there will arise the difficulty of the men getting to their drill halls, drillships or whatever headquarters is provided, if they live in small places or in the country remote from R.N.V.R. centres. This can be got over, to a certain extent, by making such men serve on List II and perform longer training at sea every year. Such men, however, would be unlikely to remain long in the Service as they would not participate in the corporate life of a Division.

As for officers, it should be possible to institute some form of White Paper for conscript ratings while they are serving afloat so that when they join up with their R.N.V.R. Divisions their officers can consider them for Commissions. This would satisfy those who demand a universal lower-deck entry, the necessity for which is not always apparent to some older officers. It would mean the disappearance of the R.N.V.R. Midshipman while conscription lasts. The prestige of the Reserve would be greatly enhanced, however, if a limited number of Commissions were to be granted to selected young men of 17 to 18, resident near a Division, who could thus substitute

Volunteer training for compulsory service. They would have to do at least six months in the gunroom of one of H.M. seagoing ships during their first year or two. Commanding officers would be able to select a few likely young officers in this way and obtain the nucleus of a good lot of officers. There are still some of us who believe in Lord Fisher's dictum that "Favouritism is the secret of efficiency"; "Favouritism" being interpreted as the selection of the most promising.

Whether the Naval Air Branch should have any place in a future R.N.V.R. is a point open to question. On the whole it is thought that an entirely separate organization on the lines of the Auxiliary Air Force would be preferable. The Air Officers would be unable to play much of a part in the Divisional life for their sphere of activity would necessarily be remote from Headquarters and airfields do not always happen to be handy to the existing R.N.V.R. Divisions. If, however, it is considered that a naval aviator should receive a basic naval training before he starts flying, then the R.N.V.R. is the force in which to do it and he could pass on to an Auxiliary Squadron later.

There is a great deal to be said for the formation of a Women's R.N.V.R. which could be an integral part of the Reserve and make use of the training facilities in the Divisional headquarters.

In conclusion, it must be emphasized once more that it is upon the *permanent* Reserves that the Navy relies to get the Reserve Fleet to sea in an emergency, to bring the first line fleet up to war strength, and to commission the new bases which will be needed early in a period of hostilities. However good the temporary officers and hostility-only ratings may be after a few years it is absolutely vital to maintain a strong, efficient and keen Volunteer Reserve in order to start off on the right foot. With the reduction in the active service Navy which invariably follows a great war, money spent on the cheapest of all trained reserves—the R.N.V.R.—must be a sound investment.

(See also Navy Notes p. 623)

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## RECRUITING FOR INFANTRY

By BRIGADIER A. H. G. RICKETTS, D.S.O., O.B.E.

THE changed conditions brought about by the recent war will require careful examination to show whether satisfactory recruits, both officers and men, can be expected for the Infantry during the next decade. At the outset we must make two important assumptions on which to base a review. First, that a good infantry arm will still be required for very many years to come and, second, the demands on modern infantry are so exacting that the concept that any old body will do is as dead as the dodo. To produce good results the infantry soldier has to be a reasonably selected man, more particularly the officer.

### FIFTY YEARS AGO

At the turn of the Century officer recruitment provided no difficulty for Infantry. Middle class families were large, and younger sons had to go out and make their own way in the world. An Army life at that time provided cheaply amenities which boys of the upper middle class wished to enjoy, for example travel, shooting, fishing and riding. Full dress still had its glamour and the endless succession of minor wars provided adventure, advancement for the lucky and medals and decorations, particularly for the Infantry, because they were principally infantry wars. A fair proportion of officers had means of their own and could retire in comfort, regarding the slender retired pay as a supplement. Moreover, those without means could find employment fairly easily on retirement because life was less complicated and specialized in those days. Finally, the glamour of the machine had not yet begun to supplant adventure, and the dawn of the technical arms of the Service was still below the horizon.

For the other ranks infantry recruiting was good enough. The pay and conditions of service were very bad indeed, so only the least successful stratum of society was touched, as a rule. The grinding laws of poverty ensured an adequate supply of down-and-outs to join the Army. However, the nature of an infantry soldier's work did not require great intelligence but only fortitude, endurance and obedience to discipline. The strict code of conventions of the day ensured that those who broke the code in any way were excommunicated from their particular society. It was the age when fathers really said and meant "go away and never darken my doors again." These men then had the three choices of joining the Army, going to sea or emigrating. This class of person provided many a gentleman ranker and more educated soldier. Even the dullness of peace-time infantry training in those days compared favourably with the poverty of pleasure to be found in sweated industry and slum conditions.

### RECRUITING DURING THE 1914-1918 WAR

During the War of 1914-1918, infantry recruits, for the greater part of it, were forthcoming in quality and number well up to the average in both the officer and the other ranks strata of society. For the old-fashioned ideas of honour, patriotism, gallantry and the like still prevailed and any man worth his salt could not feel happy in himself if he did not fight the Hun, as it were, at close quarters. The comfortable concept of "total war" had not yet become universal, whereby any twinge of conscience about not actually fighting for your country could be alleviated by the thought that you could fight an honourable war for your country in your own eyes, and what



is far more important in the eyes of your women folk, by battling away on the factory front.

But by 1918 many disturbing factors were afoot. The absolute deadlock of the Western Front, enhanced by the rise in power of the automatic, caused ghastly casualties for the Infantry. The discomforts, and above all the soul-destroying dullness of trench warfare, with its negligible scope for leadership, enterprise or any other quality (except bovine endurance and stoicism) caused the best men and officers to look elsewhere, and the Flying Corps began to claim the cream. The enormous fatigues involved by the build-up of this static battle line turned infantry into slave labour. The Pioneer Corps was formed too late to remove the harm done to prestige. The odious term P.B.I. was coined and it damaged infantry morale and status for the next two decades. P.B.I. fathers of the 1914 War thought twice in the twenties and thirties about putting their sons into Infantry.

#### RECRUITING BETWEEN THE TWO WARS

In the period between the two wars every single factor in the world of recruiting militated against the Infantry very heavily. Let us summarize them roughly in their order of importance.

Middle class families with Service traditions shrank drastically in size; far fewer younger sons could be found. Moreover the prejudice of the really old upper and middle class families against trade had broken down and, gravely impoverished by the war, they began to send their sons into the cities of England rather than into the service of Church and State at a remuneration which, in terms of value, now fetched an even smaller return than before the war. The progress in the emancipation of women of all classes was causing great changes in social habits. Women were beginning to insist on accompanying their men friends on all forms of recreation and to dictate what form that recreation was to take. Accordingly motor car riding, road-house parties, the cinema, sun bathing and the cult of games such as tennis, football and athletics (particularly watching them), grew in importance to the exclusion of the more manly field sports in which women cannot play so leading a part. The Army, particularly the Army abroad, lost increasingly in attractiveness from this point of view.

So far, all these tendencies have militated against officer recruitment in most branches of the Services alike. But worse, for the Infantry, was to follow. The day of the technician had arrived and the Infantry remained unmechanized. The young man from the technical school and the sons of the management class of industry found no attraction in the Infantry. Thus we did not begin to touch a new source of officer supply to supplement the waning one. The daily work of an infantryman in no way touched the mechanical which means so much to the modern young man. The cavalry retained, and will retain, a popularity with both officers and men because military progress has happened to coincide with similar social change. The cavalry have become the Royal Armoured Corps and have exchanged their horses for tanks and lorries. The R.A.F. provided excitement, without discomfort, and the sense of speed and concern with mechanical contrivances which were all the urges of the youth of 1919-1939. R.A.F. stations were usually within reach of the flesh pots of the cinema, and service abroad was much less and invariably in stations where the city type of amenities were within reach. Pay was good in the R.A.F.

As regards other ranks, recruitment for Infantry fell to a disastrously low ebb during this period. In spite of much unemployment, many preferred the dole to the Service. The better type of man who wished to get, and keep, good employment would join the Ordnance, R.A.S.C., R.E., R.A. (mechanized) and learn a trade which would be useful to him afterwards. Pay was poor, but the additional trade pay for technicians, clerks, etc. was ridiculously good in other arms by comparison with the maximum an infantryman could earn. Further insult was added to the infantryman by presenting most clerks, storemen, fitters and the like with two or three stripes, as well as extra trade pay, albeit in many cases their responsibilities were not exacting and they did not have to command men. Warrant Officers and sergeants abound in technical corps, and many have acquired the privileges of a N.C.O. without having to undertake commensurate responsibilities in the command and training of men. Their trade pay should be regarded as adequate recompense for the skill required and responsibility involved in the care of valuable equipment or files.

Next, the infantry soldier could have no pride in the ugly khaki uniform he was expected to wear on all occasions—an uncomfortable garment to fight in and a dreadful garment to walk out in. It was redolent of the memories of Paschendaele. Other arms could take pride in their newly-won vehicles or interesting technical equipment, e.g., wireless and so forth. The R.A.F. had collars and ties like respectable citizens.

The wave of pacifism in the 1926-1936 decade hit Infantry worse than any other arm. It was more than *infra dig* to join a bunch of killers. But you might not lose all face with respectable friends if you worked in a Signals exchange or Ordnance workshops; you could practically disguise to your friends that you were a soldier at all.

Lastly the freedoms of those years resented the essential discipline of the Army and the Infantry in particular. It is admitted that we infantrymen might have helped ourselves, and led the way, by relaxing some of the restrictive non-essentials in this respect much earlier.

#### RECRUITING DURING THE 1939-1945 WAR

Let us now trace the progress of infantry recruitment through the years of the latest war. This is a sad period of a galloping consumption until now in 1946 no single attraction remains for infantry recruitment. First of all, in the early stages of the War, as in the frantic recruiting and conversion period just before the War, the anti-aircraft branch received all the publicity, top priority of equipment, accommodation and manpower. Long before the infantryman felt that he was wanted, anti-aircraft were in the "front line" both of the War and public opinion. There was much attraction, particularly for female relatives, in the idea of fighting your share of the war from the relative comfort of a gun site in Hyde Park or at the worst on a Yorkshire moor. Too much first-class officer and warrant officer material found its way into the A.A. at this stage. Many were later transferred to other branches of the Royal Artillery and finally some compulsory transfers to Infantry took place in the last lap of the War. The strategic situation called for a waiting game from the rest of the Army, and so both R.A.F. and Navy, who had a full role to play, attracted the bulk of the first flush of patriots in the first two years. The

circumstances of Dunkirk had an unpleasant flavour, reminiscent of Paschendaele, which many a father must have remembered with horror when trying to "place" his boy for a part in the War. The long, patient, suffering, helpless and sheeplike lines of troops wading in the Dunkirk waters were not of course only infantry soldiers, but there was a P.B.I. atmosphere—it might have been called P.B.A. (A for Army). It did the Army no good and Infantry least of all.

Then, when the Libyan campaigns sprang into prominence, the great public could but realize that this was a war of tanks, motors and mobile guns, and feel that the Infantry was but the dull maidservant of the battlefield rather than its queen or cutting edge. There was some dormant romance in tank crews piloting themselves across Sheikh territory in small parties, cosily bedding down at nights and having attractive supper parties of nice tinned foods on little primus stoves under the wide and starry sky. Royal Armoured Corps O.C.T.U.s. and training centres in consequence were full of fine young men. Curiously enough, the early Libyan reverses affected the R.A.C. and R.A. very little on the morale level in the country generally, whilst the Infantry were left to suffer further by the Tobruk and Malta sieges.

However, the greatest loss of good potential officers came from the necessity for all officers to go through the ranks. This was quite obviously going to be a detrimental move for Infantry, and none but the Brigade of Guards took any special steps to combat it. The conscript potential officer was influenced, more by his family than his own instincts, away from Infantry because of the harder time he would have in the ranks before gaining a Commission. Much of this was mythical, but the parents and fiancées at any rate liked to think of their young men cloistered from the rigours of battle drill and barracks in the ranks of Infantry by service in the more genteel and less irksome life of a clerk R.A.S.C. or Ordnance or operator Signals or driver R.A. Naturally, when they took Commissions, the arm in which they had served their time in the ranks got first choice of their own candidates.

On the credit side, however, one must recognize three factors which made up for a great deal. First and foremost was the birth of the School of Infantry and the Directorate of Infantry at the War Office. Second, the early formation and deployment of the Pioneer Corps did much to help towards the ideal that Infantry only dig within sound of the battle. It is not too much to say that the term P.B.I. did not crop up in the latest war again largely because the Pioneer Corps took over all non-operational digging and many guard duties at installations. Third, the publicity given to Commandos, Chindits and Airborne forces gave much reflected glory to Infantry as a whole in the public mind, although these specialist forces were a drain on the ordinary infantry battalion. Incidentally, the rigid and often pedantic claims of security which precluded the wider British public from making infantry heroes (except Lord Lovat) were most unfortunate. The finest deeds of individuals and units in North Africa and elsewhere were cloaked too frequently under belated reference to "a North Country regiment," etc. Such publicity would have been worth a guinea a minute from Alamein onwards, when it was clear that Infantry had become once again Queen of the battlefield, and we shall pay heavily now for the scant attention which it received.

Let it be admitted, before going any further, that comparisons are always odious, and the writer does not enjoy having had to make so many in this article

up to this stage. It is obvious that the course of the latest war, as it affected the demand of manpower and the prestige and development of infantry recruiting, cannot be blamed on any one or on our brother arms of the Service. However, it is felt that few thoughtful and impartial persons will disagree with the general diagnosis of trends outlined so far; and few will be found who will not admit that many drastic things will have to be done, and done quickly, if these trends are to be reversed and not perpetuated.

#### THE SOLUTION: TRAINING AND ASSOCIATED RECREATION

First of all it is quite clear that, though we have closed the gap in pay and trade pay to a very large extent between the infantryman and the other arms, we shall never all be paid at as high, let alone higher, rates than other arms. Also, we shall never catch up other arms in the matter of teaching an infantryman a trade of direct pecuniary value to him in after life. Our efforts must lie in other directions. First and foremost of these is training.

We must dispel the boredom of the daily life and training of the infantry soldier. We must compete in interest with the R.A.F., the Gunner, the Sapper and the Signaller. People have stated platitudes *ad nauseam* about the infantry soldier having more things to learn than anyone else—the skill of a cat burglar, art of a poacher, gunman etc., etc. But the fact is plain that, before the War, we never allowed the infantry soldier to learn more than a smattering of a few of the aspects of infantry warfare. The result was that he was not efficient, confident or interested in any of them. He was a jack-of-all-trades and master of none. Let us change our policy from the dreary and unimaginative one of the lowest common denominator of training (the rifle range!) which will more or less fit any station in the Empire, to one of specialization of training to make the most of the circumstances of each station. The whole trend of modern times is towards specialization. Let Infantry specialize for a year or preferably two years in each aspect of training in turn.

A feature of this specialization should be the encouragement of associated recreation, e.g., a Combined Operations station should have its sailing club on the "fifteen bobber" principle and the men have their private bathing beach on which to entertain their friends in the manner of a regimental tent at Canterbury cricket week. If we cannot train a man in the Infantry in subjects which will give him a definite career after his service, let us train him in a way which will give him a wider and fuller life and one in which social activities have full play.

The main varieties of infantry operations are:—

- (i) Sea landing and river crossing operations.
- (ii) Motorized operations in co-operation with armoured brigades.
- (iii) Mountain warfare (use of animal transport).
- (iv) Jungle warfare.
- (v) Desert warfare.
- (vi) Air landing operations.
- (vii) Town fighting.

Our aim should be so to phase the training of a battalion over a decade or so, that nearly all of these operations are covered during that period. This will mean that the battalion will go from station to station according to the phase of training it is due to tackle. Each phase, to be undertaken thoroughly, must be done at



a station which specializes in this training, that is to say has the right kind of country and is liberally provided with the proper training equipment.

A specimen period in the life of a battalion might run something like this :—

The years 1990-1991 Salisbury Plain Armoured Division training.

1992-1993 Pembroke Dock Sea landing training.  
Mountain Warfare training.

1994-1995 Aldershot or Infantry Division training.  
Catterick Town fighting.

1996-1997 Lahore Air-landing operations.

1998-1999 Bombay Jungle training.  
Sea landing training.

2000-2001 Delhi Internal Security, Skill at arms, explosives, mine laying and clearance.

These places, and the subjects taught at them, are of course purely diagrammatic. By all means substitute somewhere in Austria for Pembroke Dock (for mountain warfare) and somewhere in Germany for sea landings. It shows six years at home (Europe) and the first six years of a tour abroad, the last two supposed to be at a station where specialist facilities are negligible so that the unit has recourse to all manner of shooting, fencing, unarmed combat, mine laying and clearance and its associated tactics. A subsequent paragraph on Garrison Companies explains how a battalion can be stationed just outside a big city like Bombay, primarily for Internal Security duties, but capable of carrying out a really good training programme as well.

At each of these stations a battalion takes over all the requirements for its training role there, for example, mules and horses for mountain warfare, LCA's, LCM's, LCP's and rowing craft for sea landings. A training team from the appropriate school is attached for the whole period. The first year would chiefly be spent on unit courses and numerous outside courses and attachments (Navy, R.A.F., Armoured Regiment according to station) and the second year would see the unit doing higher training with the unique spectacle of officers and N.C.O.s back from courses actually at once putting into use what they have been taught on them.

An essential point about each of these stations must be liberal Army assistance in recreation kindred to the type of training the station specially provides. Here are a few examples. At sea landing training stations a boat club (sail and motor), with craft provided by Army at small hire rates, maintenance assisted by a rigger from the training team ; shot guns and sporting rifles on charge to unit in jungle warfare stations where shooting blocks are reserved for the unit ; air landing stations would have light plane clubs with light plane hire service and instruction for an "A" pilot's licence available at small fees, instruction being by members of an R.A.F. training team.

Where two subjects are covered in the same station, then the unit concentrates on each subject for one year in turn, the principle of concentration being vital to success. Similar training principles apply, of course, to both Far and Middle East. The General Staff will have protracted struggles with the Directorates of Infantry and Military Training to plan the world infantry lay-out methodically, so that a due balance is achieved between the operational and the training aspect in the choice of stations.

Often when a battalion (or for that matter a whole brigade) is specializing it will be required, at the same time, to keep its potential operational place in a normal European warfare division. For the purpose of an annual brush up, therefore, and to swell attendance at manoeuvres, a battalion specializing may have to go "normal" for a concentrated month annually. This should be quite sufficient to maintain a reasonable standard, bearing in mind that the basic skill at arms and field craft of the infantryman is the same in all roles.

As training is the main plank in the proposed revival of public interest in Infantry, let us now see what we have secured. A Regular officer or other rank, by the time he has about 12 years service, will have specialized for a year or more in, say, five out of the seven special infantry tactical roles. In the course of this he and his wife will have been able to take part in pastimes which, in civil life at present day costs, he could never afford to undertake. The Army gains a much better trained infantryman at the trifling cost of the maintenance of more training paraphernalia and ground than before. Training and recreational training equipment of the type required are two a penny at the present time. We may yet fill our short service Commission vacancies by offering such an attractive life that adventurous young men will defer their permanent careers to sample it first.

#### UNIVERSITIES, TERRITORIAL ARMY, SCHOOL AND CADET FORCES

Universities will continue to be a vital source of officers for the Army. The uninspired infantry fare served up by University Senior Training Corps before the War merited the neglect Infantry suffered there by comparison with other arms. We must assume that the great majority of students will have become adequately trained as basic soldiers in school or cadet force training units. Let us capture the interest of the student straight away by specializing on one aspect of training or one type of infantry training sub-unit.

For example, Manchester University might have an infantry company composed of three standard carrier platoons, an anti-tank platoon and a signal section, carrier platoons training two or three reserve crews. Apart from the necessary elementary training, all tactical training would be devoted to the study of these infantry elements in the fluid European battle. Spare crews could always form a rifle platoon for special exercises with troops and it would not be difficult to build up interesting exercises involving advanced guard, rear guard or flank protection roles. The subject is interesting and sufficiently big to occupy the part time student-soldier fully, and yet small enough to enable him to become really efficient and take a pride in his activities.

As a further example, take Leeds and Sheffield Universities. Both are sufficiently near each other and to the glories of the moors, to develop a joint field-craft and sniper school concentrating on achieving a first-class shooting standard with rifle, automatic, carbine and grenade. Field activities would take place chiefly in the form of stalking games and patrol competitions on the field firing range on the moors. In accordance with our newly enunciated principle of linking infantry training with appropriate recreational training, the shooting rights of the field training area would be vested in the school. There is the strongest possible link between scatter-gun shooting and shooting of gunman commando type. Therefore let the infantry detachments of both Universities each run a 12-bore shooting school as part of their training. These Universities will send strong contingents to Bisley.

Further variations might run as follows: Oxford, a parachute training school, sharing membership with the R.A.F. in a light plane club, besides having some second infantry string; one or two Universities might have mortar units of a varying number of platoons; Universities near the sea might have their sea landing organization, boat and swimming clubs; Scottish Universities might mountaineer and stalk.

To apply the same principles to the Territorial Army of the future is much more difficult, but it is most necessary to make an attempt. In this case unit organization should follow a standard War Establishment. Many units and small sub-units are placed in neighbourhoods which defy training inspiration altogether. School training corps and cadet corps can do much to improve the interest of their training although it is realized that drill, marching and rudimentary tactics have got to be learnt at this stage. However, these are not purely infantry units but provide basic Army training.

There is much in the Cardwell system which is obviously most difficult to adapt suitably to present requirements. But the one really big and quite fatal error would be to abolish the County connection and establish a Corps of Infantry without first having produced adequate counter-attractions for Infantry, for example on the lines suggested in this article. At present regimental individualism and the County connection, with our uneconomical little depots scattered about, are only the attractions we have to offer. Let us make our depots more attractive and play a greater part, for, with the bulk of our Army doomed to be abroad, they are the only centres of the Army in countless large recruiting areas. Often they are the only Regular Army link with Mayors, Corporations, old comrades and the like in urban areas of up to half a million people.

#### EMPLOYMENT AFTER LEAVING INFANTRY SERVICE.

We have seen that we can never compete with other arms, the R.A.F. or the Navy in providing subsequent careers, for example for the thousands of short service officers we shall require, by teaching them something of direct benefit to them during their Army service. We can, however, redress the balance to a large extent by arranging with firms (especially nationalized concerns) and other Government departments that certain appointments are reserved exclusively for Infantry. It took most of the late war to make everyone realize that the three defence Services are really one and simply must have common pay codes and many common policies. Cannot we now realize that all Government services are really one—civil and military—in many respects? The civil servant has the advantage of a career guaranteed until he is about 55 or 60. It should at least be possible for numerous jobs to be reserved in the civil services for officers and men to take up after they have completed what might be termed a tour of service in the Army, be it three, seven, twenty-one or twenty-five years. Would the Colonial police really lose by a Government regulation whereby every policeman had to take a short service Commission in the Infantry first?

#### GARRISON COMPANIES

The institution, or if you like it, the retention, of some pioneer type companies for service in big cities has two great advantages. First, it helps us with our main object of making infantry training more specialized and interesting by relieving Infantry from finding detachments in such places as Fort William (Calcutta), Colaba Barracks (Bombay), the Citadel (Cairo) (fortunately already evacuated) and others

which may arise in future. These companies will find the employments inseparable from big cities or Headquarters towns (running "attached sections") and provide the immediate internal security guards and reserve. A battalion can be stationed outside the town, doing valuable training, and available to come in to help in the town security problem at very short notice. Secondly, garrison companies will help us find employment for infantry officers and men who have reached pensionable age, or finished a tour of Regular service, and volunteer to serve on for pension if transferred to a garrison company.

Such companies might be about 200 to 300 strong organized in, say, four to six platoons of four sections each. A flexible war establishment is required so that the company can be the right size for the town in which it serves. They can be extremely economical as they only require a low proportion of officers and N.C.Os., no headquarter overheads except a few signallers, and no weapons beyond the rifle and Sten gun. They will, however, require a high percentage of married quarters.

Officers will be found, in the main, from those who wish to continue to serve after reaching the compulsory retiring age. Company commanders would hold the rank of Major and continue to be paid as such, company officers could hold their retiring rank of Major but be paid at a special rate, which might be about £300 a year flat rate, in addition to the retired pay to which they are entitled. Service would be on two year engagements renewable, if their services are still required, subject to their being physically fit for their age.

Other ranks who have gained full pension would draw full pay of their rank in the company, their pension being held in abeyance during service. Warrant Officers and full rank N.C.Os. could transfer to garrison companies only if there are vacancies in their rank. A number of privates who have completed seven or twelve years with the colours would be allowed to transfer to complete their service for a private's pension. Many a private soldier would soldier on for pension if he could serve his latter time in more elderly company. Stations for these companies might be such places as Aldershot, Calcutta, Bombay, Rangoon, Jerusalem, Singapore.

#### CONCLUSION

Sir James Grigg, our late War Minister, has said<sup>1</sup>:—"If, then, the Army is to attract good officers it must provide them with a career which is varied and interesting in itself, and which, moreover, will fit them to find a ready outlet into civil life." Too true; but the article was too short to provide an answer to the question. This paper has tried to find an answer for Infantry, which is still the largest arm of the Service and has the least attractions to offer. Other arms have attractions of their own; we must develop attractions of our own which will draw a reasonable percentage of the good men of the nation.

When planning these we must consider what will attract the parents, wives and future wives of infantrymen. Much has already been done to enhance our status within the Army. In particular the Directorate of Infantry, with representatives at all Commands, should ensure that our needs and views are heard in the highest councils. Much still requires to be done to restore our prestige in the eyes of the civilian. It is often the little, intangible things which count. Our services

<sup>1</sup> From the London *Sunday Times*, reprinted in the *Journal of the United Service Institution of India*, January, 1946.



in this war have been acknowledged by the grant of a capital "I" for Infantry on state occasions. As further recognition, the public, I think, would be glad to see the Infantry, on a big ceremonial parade, precede its supporting arms instead of following them.

# WHAT TO READ

The first article on this subject appeared in the Journal for August, 1946, and dealt with literature on:—

- International Affairs ;
- Relations with the Dominions, Colonies and India ;
- Imperial Defence ;
- Higher Study of War.

The next article will be published in the February, 1947, Journal and will deal with:—

- Strategy ;
- Combined Operations ;
- Major Wars and Campaigns.

## THE GIBRALTAR AIR BASE

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**H**ISTORY shows that possession of Gibraltar has not always been appreciated by the British. But there can be no doubt of its value to us during the 1939-1945 war. Gibraltar was, in fact, the essential stepping-stone between the United Kingdom and the North African Campaign; only from Gibraltar could aircraft be provided to guard the Straits against the U-boats, to assist the relief convoys to reach Malta, shoot down enemy bombers, escort invasion forces and carry paratroops for the airborne assault on North Africa. Without Gibraltar none of our aircraft could have got near the enemy in the Western Mediterranean.

Although the Rock has been traditionally an army garrison and naval base, its potentiality as a base for aerial observation began to be realized in December, 1903—the year and month of the Wright brothers' first aeroplane flight—when a party from the Balloon Section of the Royal Engineers arrived with balloons to carry out experimental ascents.

After the departure of the balloons in 1905, nothing is heard of flying at Gibraltar until the 1914-1918 war, when the racecourse on North Front—the flat stretch of land to the North of the Rock, was used as a landing ground by the 80 h.p. Gnome Caudrons and 70 h.p. Bleriot Experimentals. This distressing misemployment of the racecourse was erased as quickly as possible from Gibraltar's memory. Not until 1932 was the idea of a Service airfield at Gibraltar given serious consideration, and the principal advocate for this was the Navy. The opposition was numerous and varied: there were those interested in the racecourse (and the Jockey Club was a generous benefactor of welfare to those serving and living in Gibraltar); there were the military authorities who claimed the space as the only available area for exercising troops, horses and weapons; civilians, with truth, claimed that the loss of the Victoria Gardens and the racecourse would deprive them of almost the only open space in their realm. Against these considerations the benefits of an airfield seemed remote and problematic. Private and official argument delayed any action, and when war came in 1939 only an emergency landing strip was available for the R.A.F. and Fleet Air Arm.

The unforeseen ebb and flow of war precipitated decision at the end of 1941. Reinforcement aircraft could no longer fly safely direct to the Middle East. The Germans were in Sicily and were taking over from the Vichy French in North Africa. It looked as if the Mediterranean fighting might at any moment spread westwards, inflame Spain and engulf the Rock itself.

Orders were given for the landing strip on the racecourse to be cleared and extended for the use of reinforcement aircraft. But a bigger surprise followed. The runway was to be made 150 yards wide and extended westwards for 570 yards into the sea. In the words of Lord Gort, the Governor, it appeared "to be a major engineering feat."

Action was as vigorous as the plan was ambitious. Stones and rubble were blasted from the Rock and dug from tunnels; over 400,000 tons of filling were thrown into the sea to form the foundation of this freakish runway. Although the work went on night and day, urgent demands for quicker results came from London in March, 1942. As a result, a total length of 1,150 yards was completed by 3rd April, twenty-seven days earlier than had been estimated.

So much activity within sight of the Spanish border could not fail to be of interest to the enemy, but they did less about it than was expected. On 1st April, 1942, Italian aircraft attempted to raid North Front. The Gibraltar defences were surprised to find that they were receiving assistance from the Spanish A.A.; but perhaps the surprise was greater among the Italians.

Shortly after this the R.A.F. took over North Front airfield from the Fleet Air Arm. Their first big task was to assist the relief of Malta. Flying boats of Coastal Command from the New Camp provided most of the escorts for the sea convoys. But Malta could not endure long without fighters, and these had to be brought by sea to Gibraltar, assembled by the furiously-working Special Erection Party, and flown to Malta for immediate action. The work went on night and day at tremendous pressure. Empty crates were seized as workshops and officers' quarters.

Meanwhile air traffic on the lengthening runway continued to increase. Evacuees from Malta on their way to the U.K. were being brought in by Liberators of 1425 Flight (shortly afterwards formed into 511 Squadron), and reinforcement Wellingtons were using North Front instead of Malta on their flight East.

In October, 1942, the runway had reached a length of some 1,500 yards, and work was still going on at breakneck speed in preparation for Operation Torch—the Allied landings in North Africa. On the night of 7th November—the day before the invasion began, there were about 650 aircraft assembled and parked; dispersal was out of the question. Next morning, from the Judge's Box of the obliterated racecourse, Flying Control moved off fighter after fighter. On 10th November, 36 Dakota troop carriers arrived, followed by Fortresses, Beaufighters and Lightnings, and all took off the next day. Between 8th and 14th November there were 1,274 aircraft movements—one every seven minutes 54 seconds. Thirty-seven Dakotas took off at night in 93 minutes, 27 Lightnings landed in 17 minutes, 6 Fortresses and 6 Lightnings took off in 6 minutes, 16 Spitfires in 4 minutes, 11 Dakotas and 9 Spitfires in 12 minutes. The Special Erection Party had assembled 485 aircraft, and 466 were despatched to North Africa. These figures make aviation history.

After this North Front settled down to a more orderly existence. But transit aircraft increased in numbers. Transport aircraft, then a growing arm of the R.A.F., were obliged to fly far West of France and Spain and to refuel at Gibraltar. In March, 1943, aircraft movements totalled 4,292. In August, when the 1,800-yard runway had been completed, there were 6,386 movements. All this transit traffic made new demands on North Front's facilities, and the newly-formed Transport Command formed a Staging Post utilizing those buildings present, hardly larger than those of a wayside railway halt, as the foundation of No. 73 Staging Post.

In July, 1944, North Front saw another sudden burst of activity, when U.S.A.A.F. aircraft passed through on their way to take part in the invasion of the South of France. In two days, 196 aircraft landed and took off. Ninety-four of the first arrivals, plus a York and a B.17, landed in 79 minutes. These, and the earlier figures quoted, are effective answers to those who, in the 1930's, doubted whether a manageable airfield could ever be made at Gibraltar.

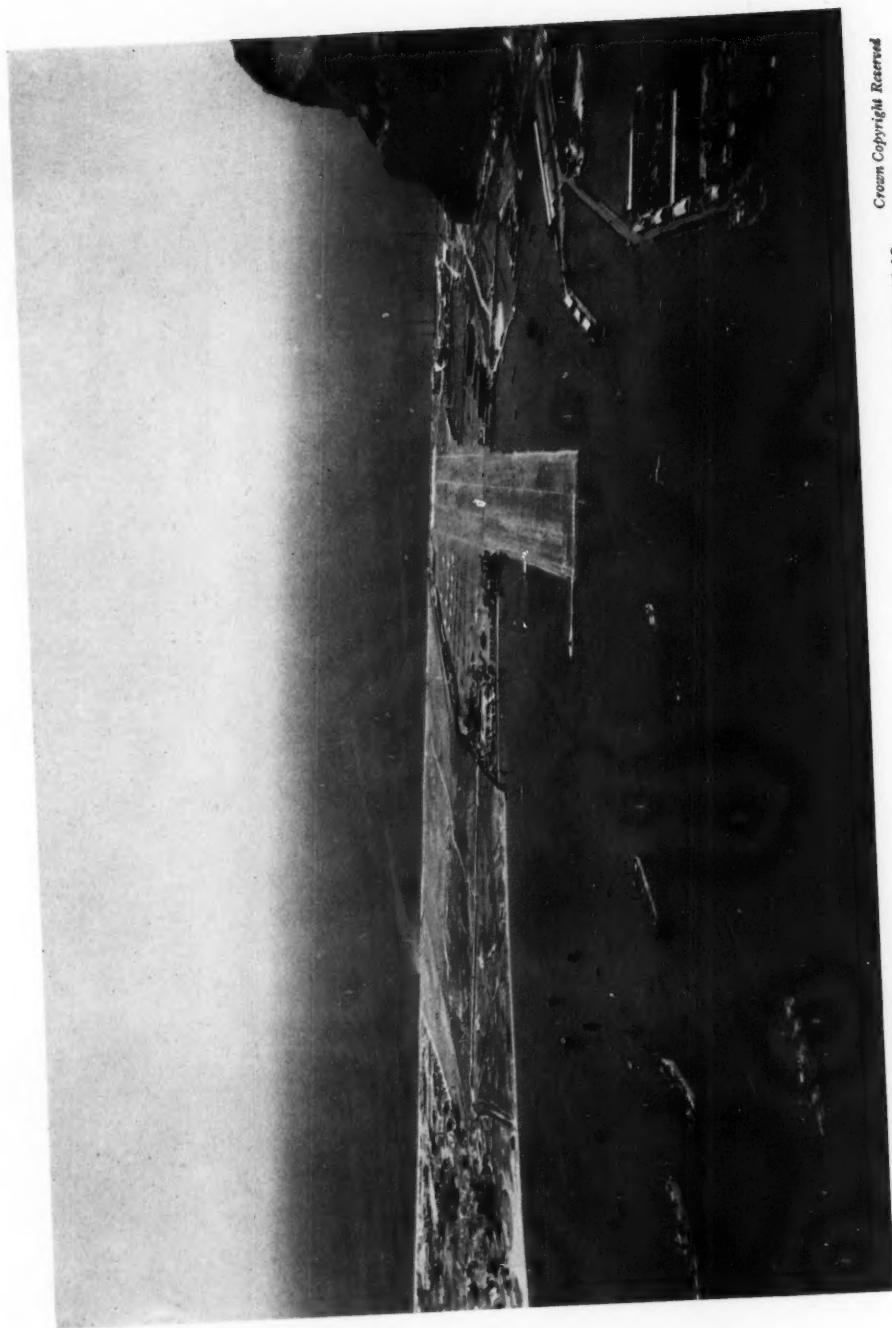
The short but crowded history of North Front cannot be told without a special tribute to the ceaseless vigil kept by the Coastal Command aircraft flying East and West of the Rock on anti U-Boat and shipping patrols, air-sea rescues, general

reconnaissance and meteorological flights. From the early days of the War, their Hudsons, and their Blenheims and Wellingtons, assisted by flying boats from New Camp, maintained a watch on the Straits and the surrounding seas that was vital to our Middle East and North African campaigns. For most of the time there was no possible diversion base to which these aircraft could return. Some of the squadrons taking part in those operations later earned further distinction as transport support units in Transport Command—notably Nos. 233, 48 and 52 Squadrons.

With the liberation of France, transport and reinforcement aircraft could be re-routed, and now North Front's traffic has dropped to a few scheduled R.A.F. and B.O.A.C. aircraft a week, plus the tireless meteorological sorties of Coastal Command, and the Staging Post has now been passed to the control of Coastal Command.

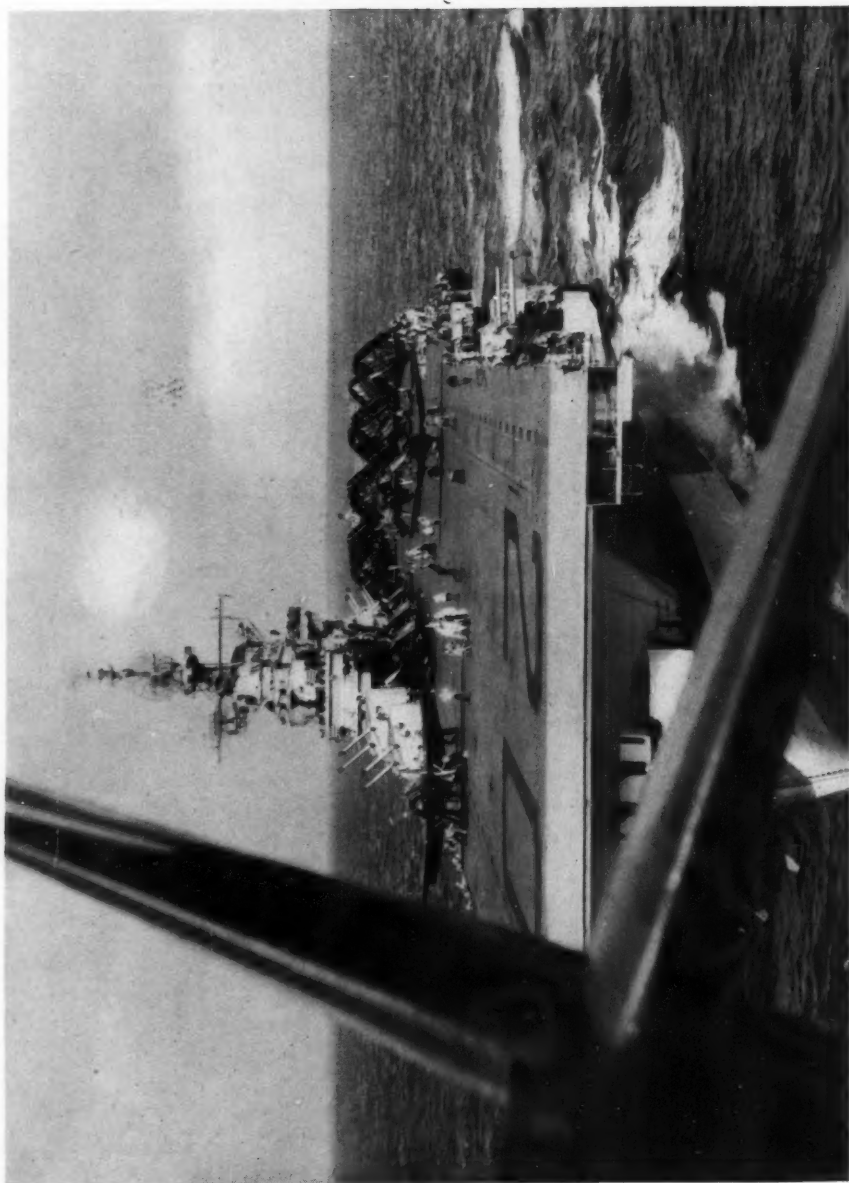
But the airfield at North Front, prepared with great vision, at tremendous speed, and in spite of much indifference and some opposition, enabled Gibraltar to play a part in recent years as momentous as any since 1704.





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THE GIBRALTAR AIR BASE AS COMPLETED IN AUGUST, 1943



*By courtesy of U.S. Navy Department*

**U.S. AIRCRAFT CARRIER "BENNINGTON"**  
**TYPICAL OF THE CLASS OF LARGE CARRIERS USED IN THE WAR IN THE PACIFIC**

## THE VICTORY IN THE PACIFIC

By ADMIRAL RAYMOND A. SPRUANCE, U.S.N.  
President of the United States Naval War College

On Wednesday, 30th October, 1946

ADMIRAL SIR CHARLES J. C. LITTLE, G.C.B., G.B.E.  
in the Chair

THE CHAIRMAN: When your Council were deciding on the lectures for this Session, they determined that the Victory in the Pacific should form the subject of one of the principal naval lectures. They also hoped very much that we should be fortunate enough to have an officer of the United States Navy who had served in that theatre to give the lecture.

Accordingly I approached Admiral H. K. Hewitt who, at that time, was commanding the United States Naval Forces in Europe, and although we all expected that our request would be received with the greatest sympathy, we did not anticipate that we would have the signal honour of having the President of the United States Naval War College come here specially from the United States to give us this lecture. We are, therefore, very much indebted to Admiral Hewitt and through him to Fleet Admiral Chester W. Nimitz and the Navy Department in Washington for the great honour we have been accorded this afternoon.

I am very fortunate and privileged to be in the position of being able to introduce Admiral Raymond A. Spruance to you. I will not take up the precious moments of this afternoon by telling you about his career before the War except to say that it was such as to indicate that, if the opportunity presented itself, he would prove to be an outstanding leader in war.

In September, 1941, just before Pearl Harbour, Rear-Admiral Spruance, as he then was, took command of Cruiser Force 5 in the Pacific, and shortly before the battle of Midway found himself a Task Force Commander, in which capacity he took part in that battle under the command of Vice-Admiral Fletcher. During the battle Vice-Admiral Fletcher's flagship, the "Yorktown," was put out of action and the Vice-Admiral dropped out of the scene, leaving Rear-Admiral Spruance in command. You know all about that battle. It was noteworthy, I think I am right in saying, in being the first battle in which the modern Japanese navy received a reverse.

After that, Admiral Spruance joined Admiral Nimitz as Chief of Staff, and later was made Deputy Commander-in-Chief of the Pacific Fleet. In 1943 he was appointed Commander of the Central Pacific Force.

In command of that Force our guest to-day achieved great results. First of all there was the capture of the Gilbert Islands, followed by the invasion of Kwajalein and the by-passing of others of the Marshall Islands. That led the way to the capture of Truk and Palau, together with the Marianas. Those operations forced the main Japanese Fleet to withdraw to the Philippines and to Home Waters, and ended up in the battle of the Philippine Sea, in which our guest for the second time turned back the Japanese main fleet.

After the occupation of the Marianas Admiral Spruance stood down for Admiral Halsey to take command of the Fleet. The United States Navy hit upon what was, I imagine, a unique, though very fine system of alternating command of the Fleet between

these two great Commanders. When Admiral Halsey was in command it was known as the Third Fleet and when our guest was in command it was known as the Fifth Fleet.

After the Philippines had been captured and occupied Admiral Spruance was charged with the important duty of breaking the inner crust of the Japanese defences, and was responsible for the capture of Iwo Jima and, after that, Okinawa, which was the hardest-fought and most sanguinary naval battle of the War, opening the way for the final assault on and surrender of Japan itself.

As I have mentioned, Admiral Spruance is now the President of the United States Naval War College—an Institution dating from 1884—a fact which is of interest to us because none of our naval institutions date from so far back! The Admiral has had the unique experience of having served three times at the Naval War College, once as a graduate and twice on the more Junior Staff; so he is an officer, so rarely found, who has studied his profession on the high academic plane and, at the same time, has proved himself to be one of the greatest sea commanders of our time.

I now have great pleasure in asking Admiral Spruance to address you.

#### LECTURE

**I** HAVE been asked to speak on The War in the Pacific. In looking over the JOURNALS of the Royal United Service Institution, I note that you had a lecture on 24th January, 1945, by Mr. William Courtenay which covers General MacArthur's campaign in the South-West Pacific Area, and one on 31st October, 1945, by Captain McManes, U.S.N., which covers the Battle for Leyte Gulf.

To avoid repetition I shall devote most of my time to those operations against Japan which took place in the Pacific Ocean areas under the overall command of Admiral Nimitz.<sup>1</sup> Briefly, the South-West Pacific Area under General MacArthur comprised the larger land masses of Australia, the Solomons—West of longitude 159° E., New Ireland, New Britain, New Guinea, Borneo and the Dutch East Indies, and the Philippines. The Pacific Ocean areas under Admiral Nimitz covered the remainder of that ocean which was important as an active war theatre. It took in the Aleutians, the Hawaiian Islands, Guadalcanal and the islands lying adjacent to it in the Solomons—East of longitude 159° E., New Zealand, New Caledonia, the New Hebrides, Fiji, Samoa, The Ellice, Gilbert, Marshall, Caroline and Marianas groups of islands, the Ryukyus, Formosa, Japan and the coastal waters of China—North of latitude 20° N.

In considering the war against Japan, the priority of the war against Germany should constantly be kept in mind. Until the end of the war in Europe, this always had a great effect on what could be allocated to the Pacific.

Looking back, I think the war in the Pacific may be divided roughly into three periods.

#### THE DEFENSIVE PERIOD

The first, or defensive period, lasted from the Pearl Harbour attack on 7th December, 1941, up to our landings on Guadalcanal and Tulagi in the Solomons

<sup>1</sup> See Map facing p. 558



on 7th August, 1942—a total of eight months. During all of this time the Japanese were on the offensive. Their territorial gains took them South to the Malay barrier; they occupied many points along the coasts of New Guinea, New Britain and New Ireland; they pushed down the Solomons to Guadalcanal and Tulagi; they seized from the United States our practically undefended outposts of Guam and Wake, and finally Attu and Kiska, the westernmost islands in the Aleutians.

In May, 1942, they tried to take Port Moresby in south-eastern New Guinea by an overseas operation, but were defeated and thrown back by the battle of the Coral Sea. Early the next month, in June, 1942, came their attempt to take Midway and positions in the Aleutians. Midway was the outpost of the Hawaiian Islands, advanced 1,150 miles West-North-West toward Japan. It was very important to us both as an outpost and because it was the jumping-off place for our submarines operating out of Pearl Harbour. The Japanese were defeated in the battle of Midway, with the loss of four carriers to our one. To offset this defeat, they contented themselves with landing on the unoccupied islands of Attu and Kiska which they started to develop as minor bases on their northern perimeter.

During the defensive period the United States was doing its best to establish some bases in the South Pacific to cover and establish its sea and air routes to New Zealand and Australia. We conducted raids on Japanese positions in the Gilberts, Marshalls, Wake, and Marcus, and by the Doolittle carrier-based attack on Japan itself. Although these raids were tactically offensive, we were strategically on the defensive. We were not strong enough, relative to the Japanese, to be otherwise.

#### A LIMITED OFFENSIVE

With the landings at Guadalcanal and Tulagi in the Eastern Solomons on 7th August, 1942, commenced the second period. This was a limited offensive. So limited was it at first, that all of our efforts for several months were exerted primarily to hold what we had taken at Guadalcanal. The Japanese also again tried to capture Port Moresby, this time by coming overland across the high Owen Stanley mountains from the North-East coast of New Guinea, to which their sea communications were then secure. It was not until early February, 1943, that the Japanese definitely gave up their attempts to retake Guadalcanal. They had already commenced to dig in further West in the Solomons and along the New Britain-New Guinea coast, indicating that their high water mark of conquest had been reached and that they had passed to the strategic defensive.

#### THE CENTRAL PACIFIC CAMPAIGN

This second period of a limited offensive, conducted chiefly in the Solomons-New Britain - Eastern New Guinea area, may be said to have continued until November, 1943, when the campaign in the Central Pacific opened. The period was marked by a growing strength on our part. We had more aircraft; new ships joined the fleet; and additional troops became available. We built great bases in the area, from which to support our growing forces. We were able to pass from a struggle merely to hold Guadalcanal and Port Moresby to a pushing back of the Japanese toward their main base at Rabaul. Much night fighting took place at

sea in the Solomons during which both the Japanese and ourselves lost ships. In the air there was a constant exchange of blows with things going more and more in our favour. The attrition was working for us as the Japanese were having difficulty in replacing their losses, whereas we found it becoming increasingly easy as the production back home commenced to reach us. Another thing which helped us was that the myth of the invincibility of the Japanese soldier had been shattered.

In the Aleutians we moved to the westward, building bases on Adak and Amchitka from which our ships and aircraft could operate against the Japanese on Attu and Kiska. Finally, in May, 1943, our Army retook Attu in an amphibious operation which by-passed Kiska. The Japanese then evacuated Kiska, which lay between Attu and Amchitka. Thereafter, the war in the North Pacific consisted of raids by our aircraft, cruisers and destroyers on enemy positions in the Kuriles. The weather in this area is mostly very bad, so the northern approach to Japan was ruled out for a major effort.

#### U.S. SUBMARINES' WAR

From the start of the War our submarines had been conducting a bold and relentless fight of their own against Japanese ships, both naval and merchant. During the first two years they were our only weapon that could reach into the waters through which the bulk of enemy shipping moved. As the toll of sunk and damaged ships grew, the Japanese found it more and more difficult to bring in their essential imports of raw materials and to send out the support required by their forces overseas. Our submarines commenced the distant blockade of Japan. This blockade tightened as we pushed forward, until finally the economic life of the Empire was almost completely throttled. It would be difficult to overestimate the part that our submarines played in bringing about the defeat of Japan. There is no need for me here to stress what submarines can do against the sea communications of an island empire.

In the late Spring of 1943 it began to look as if sufficient resources would be available, not only to continue the offensive that was gaining momentum in the Solomons-New Guinea area, but, in addition, to open up a front in the Central Pacific. The purpose of this second front was to wrest from the Japanese the control which they exercised over the great belt of ocean lying approximately West of longitude 180° and North of latitude 5° South. This control was maintained by the main Japanese fleet, based on Truk in the Carolines and supported by a series of air bases strategically located on islands throughout the area. These air bases were, as far as geography would permit, mutually supporting, and they had air pipe lines extending back to Japan, along which reinforcements of all types of aircraft could be flown to them. The Japanese air empire had no such breaks in it as we had in our 2,100 miles between San Francisco and Honolulu.

#### THE FIRST MAJOR OBJECTIVE

So long as the Japanese fleet could operate from Truk, any amphibious operations of ours to the northward of New Guinea-New Britain were exposed to enemy naval attack, unless we ourselves furnished adequate fleet support. Truk would continue

as a secure base so long as the surrounding screen of islands remained firmly in Japanese hands. It was therefore decided that our first major objective in the Central Pacific must be to gain control of the Marshall Islands. Six of the Marshall atolls were strongly held by the Japanese, five of them having airfields and the sixth a seaplane base. To the northward, 600 miles distant, they held Wake, well defended and with sea- and land-plane facilities. To the southward they controlled the Gilberts, with their main strength on Tarawa, which had an airstrip, and with less strength on Makin, which had seaplane facilities only. To the westward of the Gilberts they had occupied and fortified Nauru and Ocean Islands and had built an airstrip on Nauru. These outposts, North and South, were an essential part of the defences of the Marshall Islands.

At this time we had never attacked and captured a strongly held atoll. We knew, however, that a thorough and continued photographic reconnaissance would be required to show up the details of the enemy defences if our attack was to be successful and our losses kept within acceptable limits. Carrier aircraft were not as well suited to obtain the necessary photographs as were the regular land-based photographic aircraft. Unfortunately, we had no airfields then that were in range of the Marshalls, nor could our patrol seaplanes reach them. Our nearest landing fields were at Funafuti in the Ellice Islands, 1,300 miles, and at Canton, nearly 1,600 miles from Kwajalein in the centre of the Marshalls.

#### THE GILBERTS OPERATION

After rejecting a proposal to make a simultaneous assault on five of the six Japanese-held atolls in the Marshalls, and after consideration of an approach from the North by first taking Wake, or an approach from the South through the Gilberts, the southern flank was decided upon as our first step toward taking the Marshalls.

This had many advantages. We would be coming from our main line of communications to the South and South-West Pacific, with a number of fairly well established bases along that line. In the Gilberts we could be taking atolls with islands on which excellent airfields could be built quickly. These airfields would be useful as bases from which our land-based aircraft could be operated throughout the Marshalls in connection with our next move. The scope of the operation would, we thought, be kept safely within the capacity of the resources allocated to its accomplishment. We would have an opportunity to test our amphibious equipment and methods against positions on the perimeter before attacking the centre.

As a preliminary to taking the Gilberts, we built additional airstrips suitable for heavy bombers on Nukufetau and Nanomea in the Ellice Islands and on Baker Island, which is 350 miles North-West of Canton. These fields enabled us to operate more aircraft, and they gave us positions closer to the Gilberts and the Marshalls, which extended the range of our aircraft. We also commenced, on a small scale, the formation in the lagoon at Funafuti of a Mobile Service Squadron to furnish our advanced base logistic support.

The Gilberts operation was important to us in that our plans for it established, basically, the organization and the pattern that were used thereafter as a basis for future operations in the Central Pacific. Our task organization gave us: a Fast Carrier Force; a Joint Expeditionary Force; and a force which had the operational

control of the shore-based aircraft and shore bases within the area of operations and of the Mobile Service Squadron which was to furnish our advanced base logistic support.

The Fast Carrier Task Force was the spearhead of the operation. For the first time we tried out the tactical assignment of our new fast battleships with the fast carriers—an innovation which worked out so satisfactorily that we continued it throughout the remainder of the War. This meant that the Fast Carrier Task Force was composed of carriers, battleships, cruisers and destroyers. The Task Force was subdivided into task groups to facilitate its handling tactically and to permit its use against separated objectives. The battleships furnished the heavy gun support for the carriers; they had powerful anti-aircraft batteries and their great fuel capacity made them most useful for refuelling destroyers. The carriers furnished the air support which is so essential in modern naval warfare, as well as the long range striking power which is their primary function.

The Fast Carrier Task Force arrived at the objective ahead of the Joint Expeditionary Force; knocked out enemy air that was in reach; covered the movements of the amphibious forces; made preliminary bombing attacks and gun bombardments on the objectives; furnished the air support required by the troops during their landings and during subsequent operations ashore until such time as airfields could be constructed and activated to take over that job; and, finally, was responsible for giving the protection against enemy naval and air attack that was required until the newly-captured positions were strong enough to stand on their own feet and to be left for limited periods without fleet support. Air support for the troops was more and more taken over by the small escort carriers, as this type became available in sufficient numbers.

#### THE JOINT EXPEDITIONARY FORCE

The Joint Expeditionary Force contained the assault transports with their embarked troops, the assault cargo vessels, gunfire and air support groups composed of old battleships, cruisers and destroyers, and of escort carriers, and such other components as were required for use at the amphibious objective. It included early movements of garrison forces and base building materials. Admiral R. K. Turner was in command of the Joint Expeditionary Force throughout my operations in the Central Pacific, and was responsible for the planning of the amphibious part and for the execution of these plans at the objective. Needless to say, the starting point for his plans was the plan of the commanding General of the expeditionary troops for the landings and his scheme of manoeuvre on shore. The plans for subsequent base development, including the scheduling and shipment of the material and personnel required by these plans were a function of a section of Admiral Nimitz's staff back at Pearl Harbour. The execution of the base development plan was started by the Commander, Joint Expeditionary Force, but was turned over to the Shore Base Commander as soon as conditions permitted.

The provision of logistic support to the fleet by Mobile Service Squadrons, both at anchor in an advanced base and to ships operating at sea, was not a new idea, but it was one which underwent a tremendous expansion and development as we moved West. We were forced to it in the Central Pacific, because of the great distances involved and because of the lack of land area around the large



anchorage. Without these Mobile Service Squadrons we could never have had the rapid movement of our fleet to the westward at ever increasing distances from Pearl Harbour and its continued operation as a fleet in these waters. Individual ships returned for Navy Yard overhauls, but the fleet remained away after January, 1944.

The matter of logistic support at sea during the Gilberts operation concerned itself chiefly with fuel. We delimited and gave designations to a number of fuelling areas. Each day the oilers were available in one of these areas to fuel ships sent there by the various task force commanders. Each night the oilers moved to a new area which we had selected as most likely to be free of interference from enemy air and submarines. As oilers were emptied, their remnant cargoes were consolidated and they were returned for reloading. New oilers were ordered in to take the places of those emptied.

The atolls designated for capture in the Gilberts were Tarawa, Makin—100 miles to the northward of Tarawa, and Apamama—60 miles South of it. Tarawa turned out to be very tough to take; Makin was easy; and the twenty-five Japanese soldiers on Apamama killed themselves when our marines landed in order to avoid being taken prisoner. On these atolls we were able to build four airfields and to move to them the aircraft squadrons and their ground personnel in time to be ready for the Marshalls operation. As our initial landings in the Gilberts were on 20th November, 1943 and in the Marshalls on 31st January 1944, and as we had to return to Pearl Harbour, 2,000 miles away, in between the two operations to get the ships ready and to make the plans, everything was pushed for time.

The capture of Tarawa during the Gilberts operation was the source of many lessons in how to effect a landing on and to capture a strongly defended Japanese island. We learned that we needed more preliminary bombardment prior to the landings to soften up the objectives; we also needed a greatly increased number of amphibious tractors, together with amphibious tanks, to use in the initial assault waves that had to seize the beachhead. The proportion of high capacity bombardment ammunition to armour-piercing that we should load into our combatant ships was always a compromise between what was required for the troop support and what might be required by the ships themselves if the Japanese fleet came out.

The question of preventing enemy air attacks at the amphibious objectives was one to which we gave careful consideration. The only sure way to do this was by knocking out all the enemy aircraft on fields in range and then preventing more from being flown in. The extent to which we were able to accomplish this depended chiefly upon the geographical set-up of the area in which we were operating and the strength that we had available for the job. In the case of the Gilberts operation we were not strong enough to get at the Japanese fields on Kwajalein, Wotje and Maloelap atolls in the Marshalls, and so were subjected to frequent attacks by aircraft from these places. Many of these were twilight torpedo-aircraft attacks. We made our first attempts at operating carrier night fighters at this time.

#### THE MARSHALLS OPERATION

As I have already noted, the Gilberts operation was followed as soon as possible by the Marshalls operation. Initially, this involved the capture of Kwajalein atoll and, in addition, the occupation of Majuro atoll. Kwajalein, located in the centre

of the Marshalls, was the largest atoll in the group and its seat of administration. In the atoll there were two strong points. One was at the North-East corner on Roi-namur with outlying islands on each side of it. The other was at the southern corner on Kwajalein Island, also with outlying islands. Roi had the best airfield in the Marshalls. Kwajalein had an airstrip on which construction had been stopped before completion, so that it was usable only for emergency landings. As Roi-namur and Kwajalein Islands were separated by more than forty miles, their capture involved two separate amphibious operations, which proceeded simultaneously, each with one division of troops allocated to it. Majuro atoll we occupied at the same time, because its position was such that it commanded the Japanese-held atolls of Wotje, Maloelap, Mili and Jaluit and covered our sea routes into Kwajalein, and because it had a magnificent anchorage and two islands on which airfields could be constructed.

The elimination of Japanese air for the Marshalls operation was accomplished by the assignment of objectives to both shore-based and carrier aircraft. In the North, aircraft from Hawaii staging through Midway hit Wake. In the South, aircraft from the Gilberts took care of Kusaie, Nauru, Jaluit and Mili. Aircraft from the four task groups into which the Fast Carrier Task Force was divided took out Japanese air on Wotje, Maloelap and the two ends of Kwajalein on the first day of their strikes, and during that night one task group moved West to Eniwetok, where on the morning of the second day it destroyed the aircraft that were banked up there. These aircraft had been prevented from flying East during that first night by our keeping under intermittent bombardment by surface ships throughout the night the fields on which they might have landed. We continued our intermittent attacks on Eniwetok and the by-passed Japanese positions by carrier air and ship bombardment, respectively, while we captured Kwajalein and built airstrips at Kwajalein and Majuro.

The capture of Kwajalein went so rapidly and with such small losses—as a result of the lessons we had learned at Tarawa during the Gilberts operation—that a change was made in the overall Pacific plans at this time.

Originally, the Pacific fleet forces involved in the capture of Kwajalein were to have gone to the South Pacific for the support of an operation North-West of the Solomons. This operation was to have been followed by the capture of Eniwetok, the westernmost atoll in the Marshalls and the key position in the Japanese air pipe line between Truk and the by-passed atolls in the Marshalls. It was decided to proceed as soon as possible with the capture of Eniwetok. With Eniwetok in our hands we would have complete control of the Marshalls and we would have the base needed for future operations in the Central Pacific, whether these operations were against Truk or the Marianas, which was as yet undecided. The Japanese would be given the minimum of time in which to build up their defences with the additional troops they had recently put into Eniwetok.

As a cover for the amphibious operations at Eniwetok, we started with a strike on Truk by the Fast Carrier Task Force on 16th and 17th February, 1944. Truk, as I have already mentioned, had been used as the base for the Japanese fleet. We hoped that we might surprise an important portion of their fleet in Truk, but, unfortunately, nothing was left there in combatant ships larger than some light cruisers

and destroyers. We did, however, effect complete surprise, and our bag of aircraft, ships, shipping and shore installations was well worth while.

### THE NEXT OBJECTIVE

This strike on Truk was followed a week later by our initial carrier raid on the Marianas. Here, for almost the first time, our carriers were picked up by enemy search aircraft the day before their strike and were attacked many times throughout the night run in to the launching position. On completion of this raid, which was on 22nd February, our Fast Carrier Task Force returned to its base at Majuro, 1,600 miles to the eastward of the Marianas. The attack on the Marianas had given us a good bag of enemy aircraft, some shipping and damage to shore installations, and, what was more important, our first photographs of Saipan and Tinian and our first photographs of Guam since the Japanese had taken that island from us. These islands were soon to be selected as our next amphibious objectives in the Central Pacific.

The interval between the Marshalls operation in February, 1944, and the Marianas operation in the middle of June was taken up with planning for the latter and with Pacific fleet operations in support of General MacArthur's movements West along the North coast of New Guinea. The end of March saw our Fast Carrier Task Force striking on Japanese positions at Palau, 2,300 miles West of its base at Majuro, with Yap and Woleai following on succeeding days. At Palau, as at Truk, we had hoped to get some major units of the Japanese fleet, but this time surprise was lacking and we were again disappointed. The enemy withdrew his fleet to southern Philippine and Singapore waters and never again tried to use Truk or Palau as a base for it.

The latter part of April again saw the Fast Carrier Task Force out from its base at Majuro, this time to cover and support General MacArthur's amphibious landings at Hollandia, well to the westward on the North coast of New Guinea. When these landings were successfully accomplished, it returned again to Majuro, preparatory to starting out early in June for the Marianas operation.

For the Marianas operation our nearest base was at Eniwetok, 1,000 miles distant. Eniwetok had a very large and well protected anchorage area in the lagoon. On the islands of the atoll we had two airfields and one seaplane base. Our Mobile Service Squadron moved from Majuro to Eniwetok early in June after it had completed servicing the fleet units at Majuro. In spite of a great decrease in activity after this, Majuro remained of importance to us, because there had been built up a large pool of replacement carrier aircraft which were flown through Kwajalein to Eniwetok as required, and because it was the site of an advanced submarine base with tenders, floating dry-docks, and rest and recreation facilities ashore for the crews of submarines returning from patrol.

The shift of the Mobile Service Squadron to a new base required elaborate planning in order to move all the non-self-propelled barges and lighters, the floating dry-docks, and the numerous harbour craft which could not go under their own power, and to get it done without interference with the essential work which the squadron had to do. During its four months of life at Majuro, Service Squadron 10 had grown tremendously. Despite this growth, which continued throughout

the War as our fleet and the scale of our amphibious operations continued to grow, the Squadron was always hard pressed at times to meet the demands on it for fuel, ammunition, supplies, repairs, personnel, mail and transportation. Somehow or other, however, it always did so, and we never failed to meet a scheduled date.

#### THE MARIANAS OPERATION

The Marianas operation was the largest and most important one that we had undertaken in the Central Pacific up to this time. One glance at the chart is enough to show the strategical importance of the Marianas with their position at the centre of a semi-circle which goes from Tokyo through Western Honshu, Kyushu, The Ryukyus, Formosa, The Philippines, and New Guinea. For the first time in the Central Pacific we found islands with enough land area to take a number of airfields and extensive shore installations. We lost, however, the magnificent protected anchorages which had been such an asset in the lagoons of the Marshalls.

Later, in the Marianas, we had to do much harbour development work to make the most of the small natural harbours available in Saipan, Tinian and Guam. Another Service Squadron was organized and equipped for this work of "harbour stretching," as it was popularly called. Fortunately for us, there was an extensive shelf off the South-West coast of Saipan on which, during the operation, a large number of ships could anchor in fairly deep water. With the prevailing North-East trades there was usually a fair lee, and much of the time during the summer season ships could go alongside each other. There was no protection from submarine attack, however, except air and surface patrols provided by the fleet.

Our first landings were on Saipan on 15th June, 1944, after four days of preliminaries, two of them air strikes only, followed by two more of air and bombardment. We used three divisions—two Marine and one Army, on Saipan and it took over three weeks of hard fighting before organized resistance on this rugged island ceased.

#### THE BATTLE OF THE PHILIPPINE SEA

The day following the landings, 16th June, while things were still in a rather critical condition on our beachhead, I received a contact report from one of our submarines off San Bernardino Strait in the Philippines of the sortie of Japanese heavy fleet units. This confirmed previous reports of movements of enemy naval forces which had commenced a few days previously, just after our initial air strikes. It meant that, at last, the Japanese were going to use their fleet in an effort to smash one of our amphibious operations. As Saipan was only 1,300 miles from Tokyo, their concern was understandable.

At this time two of our four fast carrier task groups were headed away to make a strike on Iwo Jima, 650 miles to the northward of Saipan. Iwo Jima was the only Japanese air base of any consequence between Saipan and the empire. I considered recalling these two task groups, but decided to let their operation stand, though on a reduced scale. To do so would have the advantages of knocking out the air strength on Iwo Jima during a critical period, of possibly confusing the enemy as to the whereabouts of part of our fleet, and of tending to cover our northern flank. The earliest date that we could expect to be attacked by the Japanese fleet



was 17th June; and it seemed reasonable to expect some delay. In preparation I reinforced the Fast Carrier Task Force with such cruisers and destroyers as could be spared from the Joint Expeditionary Force, sent back to the eastward from Saipan all the shipping not actually required there to support our landing, ordered forward from Eniwetok six patrol seaplanes for search—all that we could operate from the one available small seaplane tender, and moved the Fast Carrier Task Force to the westward of Saipan to cover our operations on the island from attack by the Japanese fleet.

During the period of waiting, we were being constantly shadowed and reported by enemy land-based search aircraft, which continued to be replaced as fast as they were shot down by our fighters. On the other hand, the searches from our carriers never were able to go far enough to the westward to make a contact. The limited sector searched at night by our four radar-equipped patrol seaplanes on the nights of 17th-18th and 18th-19th June did give us a contact, at 1.15 a.m. on the 19th, with a large enemy force. Unfortunately, because of a communication failure the report of this contact took eight hours to get through. Within an hour after it was received, heavy Japanese air attacks developed on the radar screen.

It would have been much more satisfactory if, instead of waiting in a covering position, I could have steamed to the westward in search of the Japanese fleet. To have done so would, however, have involved the possibility of our being drawn off by one Japanese detachment, while another made a run around our flank and hit our amphibious shipping at Saipan. The Japanese often operated with well separated forces, as at Midway and in the South Pacific previously and as they did later at Leyte Gulf. The importance to us of capturing the Marianas and the critical stage of the landing on Saipan at the time made me unwilling to take the risks involved. Later, when we had brought forward from Eniwetok to Saipan our large patrol aircraft tenders and a great number of patrol aircraft and had extensive long range searches going out each day, I would have had the necessary information to enable me to go after the enemy fleet with a reasonable degree of security.

The battle of the Philippine Sea started in the forenoon of 19th June, 1944, with heavy air attacks from Japanese carriers. These attacks were launched from positions to the westward out of range of our carrier aircraft. Either the Japanese aircraft had a considerably greater range than ours, or else they planned to land and reservice on the fields on Guam and Rota. These islands were still in Japanese possession.

Task Force 58—the Fast Carrier Task Force, had been formed with the fast battle-ships and their screening cruisers and destroyers as a separate task group operating about 15 miles to the westward of the line on which were the four regular fast carrier task groups. Each of these had its own screen of cruisers and destroyers. Our combat air patrols of fighter aircraft went out to meet the Japanese attacks. Most of the Japanese aircraft fell before the guns of our fighters. Those which did break through during that day generally were shot down by the A.A. batteries of the task groups they attacked. Our dive and torpedo bombers were used to attack the airfields on Guam and Rota, so as to prevent the use of these fields.

The net result of the day's action was the practical wiping out of the air groups of the Japanese carriers, except for such fighter aircraft as had remained behind for

local protection. We were fortunate in that our aircraft losses that day were light, and the damage to our ships was confined chiefly to one bomb hit on a battleship, with minor damage. A further serious loss was incurred by the Japanese at this same time when they lost two carriers—the "Taiho" and the "Shokaku," to attacks by some of our submarines which had been stationed in the Philippine Sea.

At the conclusion of the day's fighting, Task Force 58 recovered its air groups and headed West after the Japanese, leaving one task group in support of Saipan. Searches from the carriers the next day, 20th June, were unproductive until late in the afternoon, when contact was made with the retreating enemy fleet about 300 miles distant to the north-westward. Deck-load air strikes, launched immediately, hit the Japanese before sundown at extreme range for our aircraft. Considerable damage was inflicted, including one carrier sunk and one damaged. We lost many aircraft through forced landings in the water on running out of fuel on their return flight. Many of our pilots were inexperienced in night carrier landings, so the recovery of the air groups was considerably slowed down over what it would have been during daylight. We were fortunately able to locate and pick up that night and the next day many of the pilots who had made water landings.

The following day, 21st June, we continued steaming to the north-westward after the Japanese fleet, but our searches never regained contact; so at the end of the day we gave over the chase and headed East for a badly needed rendezvous with our oilers. During the entire three days we had had an easterly wind. Being up wind from the Japanese meant that every time our carriers launched or recovered aircraft they had to turn away from the enemy. This made it very difficult for us to close them.

Thereafter, the capture of the Marianas proceeded without any further outside interference except for a few night air attacks. The landings on Guam took place on 21st July after one month's preliminaries, during which we had to send transports back to Hawaii for another Army division. The Second and Fourth Marine Divisions, after three weeks of heavy fighting on Saipan and a short period for recuperation, landed on Tinian on 24th July and captured that island in what I consider was, perhaps, the most brilliantly conceived and executed amphibious operation of the War.

#### THE PHILIPPINE CAMPAIGN

At the end of August, 1944, with the Marianas operation completed, I turned the 5th Fleet over to the command of Admiral Halsey, whereupon it became the 3rd Fleet. He took Peleliu and Angaur Islands in the Palau group in a hard-fought amphibious operation. The fleet base was moved from Eniwetok to Ulithi—an advance of nearly 1,500 miles. After this, the available units of the joint expeditionary force were turned over to the 7th Fleet, which operated under General MacArthur. Then followed the Philippine campaign, with its successive landings on Leyte and Mindoro and at Lingayen Gulf on Luzon. These operations were marked by the Japanese commencing their suicide air attacks on our ships. During the Philippine campaign the Fast Carrier Task Force (Task Force 38) of the 3rd Fleet, under Admiral Halsey, co-operated with General MacArthur to furnish support by air strikes, not only in the Philippines but on Formosa, Indo-China and Hong

Kong, and to furnish protection against interference by the Japanese fleet. It was in pursuance of this latter mission that Task Force 38 participated in the Battle for Leyte Gulf.<sup>1</sup>

General MacArthur's movement into Leyte was different from the previous operations—except Hollandia—which had taken him West along the New Guinea coast and into Halmahera. These operations had been made in short enough jumps, so that each jump was kept within range of fighter support from airfields established at the last position occupied. It had been originally planned to continue this method by moving from Halmahera into a position in south-eastern Mindanao; but, in order to speed up the campaign for the recapture of the Philippines, it was decided to accept the 600 mile distance between Halmahera and Leyte and go directly to Leyte. As in the Hollandia operation, this involved the use of air support from the carriers of the Pacific Fleet to replace that hitherto obtained in South-West Pacific operations from land-based aircraft of the Army air forces.

Another difference between the operations along the New Guinea coast and those in the Central Pacific was that in the New Guinea area it was usually possible to go to places which were lightly held by the enemy and to by-pass those held in strength; whereas in the Central Pacific nearly all the positions we had to take were strongly held, although, of course, we by-passed all the strongly held places that we did not need for our own prosecution of the War. The places occupied in the New Guinea area were, in effect, insular positions. They were effectively isolated by sea and tropical jungle, instead of by sea alone, against reinforcement by the enemy from his adjacent strongly held areas.

### THE CAPTURE OF IWO JIMA

Toward the end of January, 1945, I relieved Admiral Halsey at Ulithi, and the 3rd Fleet turned itself back again into the 5th Fleet in preparation for the capture of Iwo Jima, which was to be followed in about one month by Okinawa.

Iwo Jima was a small, rocky, pear-shaped island of volcanic origin with some anchorage shelf surrounding it, which lay half way between the Marianas and Tokyo. It had no natural harbour, and all landings had to be made on the lee side of the island over beaches composed of loose, deep, volcanic sand. The value of Iwo Jima lay in its position and its suitability for airfield construction. The Japanese had one airfield on the island and were slowly building another. The importance they attached to holding the island was attested by the size of its garrison—about 23,000 men, and by the strength of the fortifications which were built to defend it.

Iwo Jima in our hands would give us a strong air base centred 650 miles from an arc that extended from the Tokyo area around through Western Honshu, Kyushu and the Ryukyus to Okinawa. It would enable our B-29s coming up from the Marianas bases to pick up a fighter escort for their attacks on Japan and, in case of damage or fuel shortage, to use Iwo Jima for emergency landings on their return flight. It would extend the range of our search planes to the southern coast of Japan. The elimination of Japanese patrol vessels from the sector which it opened

<sup>1</sup> See Lecture on "The Battle for Leyte Gulf" by Captain K. M. McManes, U.S.N., in the JOURNAL of November, 1945.

up to attack by our planes would greatly reduce the early warnings of our B-29 raids that the Japanese had been receiving from these vessels, and would also open up these waters for surprise attacks on Japan by our carrier task forces. It would cover the northern flank of our lines of communications between the Marianas and Okinawa.

Our landings on Iwo Jima on 19th February, 1944, made by three Marine divisions, were preceded by a three-day bombardment and were covered by a two-day carrier strike on the Tokyo area on the 16th and 17th, and later by a second carrier strike on the 24th. The weather in the vicinity of Tokyo was on both occasions very bad and, what was worse, unpredictable. Our targets in Japan were aircraft and aircraft factories. For the first time our carrier aircraft, with their accuracy of bombing, were able to make attacks in Japan itself and to try to reduce enemy air strength by knocking out the sources of production rather than by merely destroying in combat the aircraft already produced. We were looking ahead to a prolonged operation at Okinawa, which was only 325 miles from Southern Kyushu, and were expecting heavy air attacks to originate from the many airfields in central and western Japan. The number of the airfields in Japan itself was so great and they were dispersed over so extended an area that we could no longer hope to smother with our carrier air all those from which attacks might originate. The situation at Okinawa would, we estimated, be radically different in this respect from the conditions which we had hitherto encountered during our Central Pacific operations.

The prospect of heavy air attacks, continued during a prolonged operation at an objective close to Japan itself, meant that our Fast Carrier Task Force would probably have to remain at sea in support of such an operation for an indefinite period. During the Marianas operation we had been confronted with the necessity of sending our carriers and battleships back to Eniwetok, a distance of 1,000 miles, to replenish their ammunition. At that time, such a procedure was acceptable, but it would not be when we approached close to Japan. We must develop methods for supplying ammunition at sea from ammunition ships, as we already had done for supplying fuel and replacement aircraft. We must also arrange for the distribution to our ships at sea of the many other items required for their continued maintenance and operation.

The problem of how to transfer the heaviest bombs and shells at sea was solved, and the ships involved were equipped with the necessary gear. A new Service Squadron—Service Squadron 6, was organized during the Fall of 1944 to take over the greatly increased load of maintaining the Fleet at sea for indefinite periods and to work out the detailed logistic and operational plans to do this. Service Squadron 6 began to function during the Iwo Jima operation, at which time it demonstrated the practicability of keeping the Fast Carrier Task Force filled with ammunition at sea. It became a vital necessity for the Okinawa operation, and was used until the end of the War with great success.

#### OKINAWA

Okinawa turned out to be our last operation of the War. The date for the main landings was set for 1st April, 1945, but there were extensive preliminaries planned, starting about two weeks ahead of that. These preliminaries involved early carrier



strikes on south-western Japan and on Japanese air bases in the Ryukyus; mine-sweeping operations around Okinawa; the seizure of Kerama Retto—a group of small islands enclosing a fair anchorage off the South-West end of Okinawa, for use as an advanced base by the Joint Expeditionary Force; and an extended preparatory bombardment of Okinawa itself.

For the first time in our Central Pacific operations the enemy ashore failed to fire a single shot at our bombarding ships, minesweepers and underwater demolition teams. He did, however, go in for suicide attacks on a major scale. There were about a thousand small suicide boats in the area, of which we captured and destroyed several hundred ashore on Kerama Retto. The others did us little damage. His suicide air attacks, coming from both Japan and Formosa, were a major threat and did extensive damage to our ships. The Japanese kept up these attacks on as great a scale as their dwindling resources permitted, so long as organized resistance continued ashore on Okinawa. The fighting on Okinawa lasted for nearly three months, until the latter part of June. It was very severe, and in excess of six divisions of Marine and Army troops were required to conquer the island.

The strategic position of Okinawa was of great value because it commanded the East China Sea, which in turn gave access to the Yellow Sea and to the Straits of Tsushima. It provided a base for further operations against either south-western Japan or positions on the coast of China, North of Formosa. Physically, it had sites for a considerable number of airfields, as well as space for extensive shore installations. It had one small protected harbour and two large bays, fairly well enclosed and suitable for use as fleet anchorages. The principal handicap to the use of Okinawa as a base was the fact that it lay close to the tracks of many of the typhoons which passed through that area during the late Summer and Fall. The natives said that they expected to have at least one bad typhoon each year. Last Fall the island was hit by two of them, both of which inflicted heavy damage afloat and ashore.

Just as our aircraft operating from Iwo Jima were able to clear Japanese vessels from the area lying between that island and the southern coast of Japan, so our patrol aircraft, both sea and land types, operated very effectively against Japanese shipping throughout the East China Sea and up into the Yellow Sea and the Straits of Tsushima. Our patrol seaplanes with their tenders moved into the Kerama Retto anchorage early in the operation, and the landplanes came in later, as soon as the airfields on Okinawa could accommodate them. The two fields which the Japanese gave us there required considerable work to extend the runways and to make them serviceable in wet weather, but we soon had marine fighters operating from them for local air support. This took some of the load from the carriers, and was most helpful in combating evening twilight air attacks and in furnishing night fighters.

During the Okinawa operation the carriers were in three separate commands. One was our own Fast Carrier Task Force (Task Force 58), which kept down enemy airfields between Okinawa and Kyushu, made occasional strikes on Kyushu itself, furnished additional air support as required for Okinawa and, in general, provided such protection as it could against enemy air attacks coming South from Kyushu.

A second force of fast carriers (Task Force 57) came from Admiral Fraser's British Pacific Fleet. It was under the tactical command of Vice-Admiral Rawlings and had the task of neutralizing Japanese airfields on Sakishima Gunto—a group of islands lying between Okinawa and Formosa, and of making strikes on Formosa

when directed. In spite of the fact that Admiral Rawlings and I had had no chance for a personal conference before the operation, Task Force 57 did its work to my complete satisfaction and fully lived up to the great traditions of the Royal Navy. I remember my Chief of Staff remarking one day during the operation that if Admiral Rawlings and I had known each other for twenty years things could not have gone more smoothly.

The third force of carriers was composed of our escort carriers. They operated directly under the Commander of the Joint Expeditionary Force with their primary task to furnish air support at Okinawa. Once, when Task Force 57 had to go back to Leyte for ammunition, they took over the neutralization of the Sakishima Gunto. Because of their slow speed, light armament and poor protection, we endeavoured to have the escort carriers operate in an area where they would not be subjected to enemy attack.

Admiral Halsey again relieved me at the end of May at Okinawa, so that I might go back to Guam to make plans for the scheduled Kyushu operation. As the end of organized resistance on Okinawa approached, he took the Fast Carrier Task Force back to Leyte, to which place Service Squadron 10 had just moved from Ulithi, and prepared it for further operations against Japan itself. These operations commenced early in July, and consisted of a series of carrier air attacks and ship bombardments of coastal objectives up and down the South and East coasts of Japan, which ended only when the Emperor accepted the terms of surrender. During this series of attacks there was scarcely any reaction on the part of the Japanese. Apparently, their slender remaining supplies of aviation fuel, as well as the 10,000 aircraft of all kinds we found dispersed throughout the country, were being conserved to meet the invasion which they judged was coming.

### CONCLUSION

Looking at the War in the Pacific from a naval viewpoint, I believe three things stand out as of particular interest in the development of the art of naval warfare. No one of these things in itself could have won the War, but without any one of the three we could not have been successful under the conditions as they existed in that ocean.

The first was the great increase in strength of our carrier air force. With the large number of carriers which began to become available in the Summer of 1943, we were able to have a real strategic air force—one which had great strength and great mobility. Its strength became so great that, not only could it overwhelm Japanese island outposts, but eventually, supported by the guns of the fast battleships, cruisers and destroyers, it was able to go repeatedly to the coasts of Japan itself. Its mobility was such that the Japanese never could tell in what part of their far-flung Empire it would strike them next.

The second thing was the improvement in our ability to make amphibious landings against very strong opposition. This was due to the many new types of landing ships and landing craft, and to improved techniques of naval gunfire and air support. Without this ability to land and capture Japanese strongholds, we could not have taken the bases needed to push our control across the thousands of miles of the island-studded Pacific, cut the enemy's sea communications to the empire he had conquered abroad, and finally to bring the War home to Japan itself.

The third thing was our capacity to give the logistic support required to maintain our Fleet at ever increasing distances from our nearest permanent base at Pearl Harbour. In the last analysis it was our Fleet strength which enabled us to move across the Pacific, to isolate the Japanese island positions we had selected for capture, to furnish the gunfire and air support for the landings and to ensure the security of communications to our rear. As we approached closer and closer to Japan, continuous Fleet support in the advanced areas became more and more a necessity. The foundation of our operations was logistics. Through the agency of our mobile service squadrons, built up from small beginnings, we were able to give our Fleet the logistic support it needed when and where it was required, whether at sea or at advanced bases which moved across the Pacific as the Fleet itself moved.

I do not, however, want to leave you with the impression that the War against Japan was won by naval strength alone. Being an oceanic war it could not have been won without the requisite naval strength, and in naval strength I include naval air, both ship and land based. Without the troops—Army and Marine, who stormed ashore from the transports and, after desperate fighting, captured from the Japanese the islands we needed for bases to push our control westward, we should have had a stalemate—possibly a war of exchanging raids on outposts. It still takes the infantryman to capture and to hold territory. A further important factor in the defeat of Japan was the incendiary raids by the B-29s of the Army Air Force based in the Marianas, which effected such great destruction in the major Japanese cities. The use of the atomic bombs on Hiroshima and Nagasaki was probably the deciding factor in causing the Japanese Government to acknowledge their defeat when they did.

Modern global war requires the co-ordinated use of all arms and weapons, backed by the full economic and industrial resources of the country. Future studies of the late War will serve to emphasize the important part that sea power played in bringing about the defeat, first of Italy, then of Germany and, finally of Japan. This importance may have been somewhat overshadowed in the European Theatre because of the extent and magnitude of the land operations; but in the Pacific the vast extent of that ocean and the fact that Japan was defeated without our having to land a single soldier on her shores should leave the role of sea power clear to all.

#### DISCUSSION

CAPTAIN E. W. L. LONGLEY-COOK, R.N. : Now that you have so many bases in the Pacific and all over the world—including if need be the use of our own bases—what future do you see for Mobile Service Squadrons?

THE LECTURER : I think the potency of the atomic bomb makes them more important than ever. Although a great deal of exaggerated newspaper sensationalism has been published about the atomic bomb, it is an extremely effective bomb. I think it has been calculated that it is equivalent to between two and three hundred of our big T.N.T. bombs in destructiveness. Now that means, from the point of view of making war, that you could send a plane carrying an atomic bomb on a one-way trip. Instead of the plane with a limited radius you will have the full range plane, and we all know that bigger and longer range planes are coming along all the time. This means that any country which has the atomic bomb can reach out very much further than it did before; therefore, bases are going to be very vulnerable.

I think it may well be that the future will see our fleets kept at sea for even longer periods than they have been in the past. We all hope, of course, that there will not be

any future war, but when you study the history of mankind up to date you cannot feel very optimistic. I do not mean that these bases will not be useful, but we want to avoid concentrating too much on them and making them vulnerable targets.

VICE-ADMIRAL A. W. LA T. BISSET : How did you replenish your combat planes in the aircraft carriers ?

THE LECTURER : We had aircraft replacement pools set up behind. For instance, when we went in to the Marianas we had a pool set up at Majuro in the Marshalls and, later on, when we went to Okinawa we had a replacement pool at Guam. Some of the escort carriers were allocated the duty of bringing forward these planes. They were part of this Mobile Service Squadron which supplied fuel, ammunition and so forth.

COMMANDER H. PASLEY TYLER, R.N. : Did you have any trouble with Japanese submarines ?

THE LECTURER : There was a good deal of trouble from Japanese submarines in the early days down South of Guadalcanal. The main objective of the Japanese at that time was to keep our Navy reduced, so they went out for combatant ships and did not bother our merchant ships. Later, however, we were comparatively free because the "Hunter-Killer Groups" were organized, consisting of carriers with destroyer escorts, which hunted the submarines and, having located them, kept after them until they were sunk. When we were down at Tarawa we had ships lying outside the lagoon which could not get in, and one afternoon at about four o'clock a destroyer got a sound contact and worked for two hours depth charging until a submarine was brought up from which was taken three prisoners.

I was often glad that the Japanese did not have our anti-submarine measures, also I was glad that they were not as effective as German submarines, because in that case they would have given more trouble.

#### THE FUTURE OF THE BATTLESHIP

LIEUTENANT-COMMANDER A. F. PATERSON, R.N. : Do you think there is any future for the battleship ?

THE LECTURER : I most certainly do. I am not one of those people who believe that the battleship is obsolete. They can be used very effectively in my opinion. The old battleships were used for the purpose of bombardment because they did not have the speed to operate with the fast carriers. The carrier people were very glad to have with them the new fast battleships.

I remember when the "Franklin" was hit off Japan at about seven o'clock in the morning of the second day of our strike, at a time, unfortunately, when she had planes on deck ready to take off. She lay there disabled and we could see fires and explosions until about four o'clock in the afternoon when they managed to get the fires under control. A cruiser took her in tow and, although we were only sixty miles from the Japanese coast, because we had plenty of battleships with their big guns, nobody came out to bother us.

Again, this war was fought in the tropics where you get good flying weather except for the typhoons; but if you get fighting farther North where there is a lot of thick weather, your carrier is not going to be effective unless we get some method of operating the take-off and landing in the fog. That is where the battleship plays an extremely important role, because a big gun with radar control is an effective weapon in poor visibility. I think battleships and carriers are complementary to each other.

COMMANDER J. E. SMALLWOOD, R.N. : Did you ever feel a need for a high speed Replenishment Force in case of a sudden change of plan and the necessity for it to keep up with the main Force ? I had in mind a speed of something like 26 knots.



THE LECTURER: If your plans are laid with the assurance of being carried out, you do not need speed to get the Replenishment Force where you want it. You certainly cannot fuel at any such speed as you suggest. Our fuelling speed was 8 to 12 knots, so I do not think the question of very high speeds for those ships is so important; not if your plans are carefully laid. There are, of course, always times when high speed is very helpful, but it is a question of what it costs you to have it.

COLONEL SIR W. H. D. ACLAND: Can you tell us something about the fighting quality of the Japanese at sea and in the air? If I may say so, Sir, you have made it sound a little too easy.

THE LECTURER: The only place where we did much, other than air fighting, was down South in the Solomons. We did have some pretty tough shows in that area, mostly night fighting in which battleships, cruisers and destroyers participated. I think we had the advantage with radar, but the Japanese were pretty good in those days. The rest of the time it was air work and the ships did not get much gunnery in, except in the Battle for Leyte Gulf and especially in that part which took place in Surigao Strait.

#### THE CHAIRMAN

We were always greatly impressed from 1941 onwards with the tremendous extent of the Pacific operations, and even before that time those who served in the Far East realized the enormous sea distances involved. Admiral Spruance has given us a very vivid account of those not only tremendous but brilliant operations. When it is realized that the United States started in December, 1941, not only well behind the zero line in preparation, as every democratic country starts, but with her main fleet temporarily knocked out at Pearl Harbour, one feels that the use of the word "brilliant" to describe subsequent operations is not extravagant.

In spite of the fact that the enemy's country lay some six thousand miles off and that Tokyo at that time seemed like Fujiyama—something in the clouds, in a period of less than four years the Japanese advance to the South-East was checked, it was held, and then I think one might say the war was carried with a vengeance right up to the enemy's doorstep.

What I feel will be of interest to all of you is the system of command which executed those operations so brilliantly and successfully, particularly at this time when the subject of command on the highest level is so much under discussion. Admiral King, in his report about the system of command, says that "integration and unification characterized every amphibious operation of the War and all were successful." The main principle with regard to amphibious operations which was adopted by the United States Navy was that command should be with the Navy until the ground troops were established ashore, when it was turned over to the Army. There were cases, however, when in the process of capturing small atolls the forces were never out of range of naval gunfire, and on those occasions the system of command has been described as "Mixed Army and Navy organization," which was entrusted to the Naval Commander-in-Chief and delegated, of course, to his subordinate commanders. Those are two systems of command. Again, in the South-West Pacific there was General MacArthur with units of the Navy, Army and Aviation which were separate entities tied up in the person of the General himself.

For the final assault on Japan it was arranged that there would be a different system of command: Admiral Nimitz was responsible for all naval operations and General MacArthur was responsible for all land operations. The aviation in each case, whether it was Army or Naval, was under the Supreme Commander, as the case might be.

With regard to command in Washington, Admiral King is very emphatic in his final report that the American Joint Chiefs of Staff system worked admirably. He

emphasizes that in his opinion no single man could have commanded in Washington, and by the heads of the Services getting together round a table they were able to direct in the best way the strategy which led to this brilliant campaign and, after all, the proof of the pudding is in the eating. Of course, world-wide strategy was the responsibility of the Combined Chiefs of Staff—American and British together.

Some of us were here at the lecture given by Admiral Mountbatten the other day, and there we saw an Admiral put in charge of ground and air forces and being Supreme Commander of what was essentially a land campaign, as opposed to this water campaign in the Pacific. It would seem that the lessons of the War are that command should be continually adjusted to suit the situation which it is intended to meet.

I should like Admiral Spruance to realize that the talk he has given this afternoon to this small audience is by no means the end of it. If he will allow us, we shall reproduce it in our JOURNAL and it will go out throughout our Services all over the world and will reach a very large number of serving British officers. It will also be kept here in our records dealing with the Pacific Campaign and will, of course, be a classic among them.

#### PRESENTATION OF HONORARY LIFE MEMBERSHIP

The Council, Sir, wish to show in some tangible way their appreciation of your flying across the Atlantic to give us this lecture at our Institution. At this point, however, it might not be out-of-place for me to remind you that we were once in very close touch with one of your most distinguished predecessors at the Naval College—Admiral Alfred T. Mahan. The Centenary of his birth was commemorated in 1940 when Lord Chatfield and Admiral Ghormley spoke from this rostrum, and Sir William Goodenough was in the Chair. At the beginning of the Century Admiral Mahan was kind enough to write a paper for us, and the Council at that time offered him an Honorary Life Membership of this Institution, which he was pleased to accept.

Now, Sir, the Council wish unanimously—and I am sure that this audience will acclaim it—to ask you to accept the Life Membership of the Institution. (*Prolonged applause.*) We hope that from time to time as you receive our JOURNAL it will recall to you a happy memory of this afternoon in London, and we hope, too, that it will record in some measure our appreciation of your visit. (*Applause.*)

ADMIRAL SPRUANCE: Thank you very much indeed, Sir. It is truly a great honour that you have paid me and it gives me a great deal of pleasure to accept. (*Applause.*)





THE PACIFIC THEAT





PACIFIC THEATRE OF THE WAR



## BRITISH COMMONWEALTH OCCUPATION FORCE

By LIEUT.-COLONEL F. J. C. PIGGOTT, D.S.O., The Queen's Royal Regiment

MANY thousands of miles away from England, an experiment is taking place, the results of which, if successful, will be of considerable military importance. For the first time in history, there now exists in peace time a completely Commonwealth Force, in which the three Services of four components of the Empire are fused under one Commander. It is the purpose of this article to outline briefly the composition and task of B.C.O.F. (pronounced "Bee-cough"), the British Commonwealth Occupation Force in Japan.

The countries represented in B.C.O.F. are Great Britain, Australia, New Zealand and India, and these countries are also represented on the Joint Chiefs of Staff (Australia), which committee is the co-ordinating organization for the issue of policy direction to the Commander-in-Chief. The administrative support of the Force is an Australian responsibility, except for specialized items such as Indian foodstuffs and, of course, reinforcements.

The Commander-in-Chief is an Australian Lieutenant-General. Recently Lieut.-General H. C. H. Robertson, C.B.E., D.S.O., has taken over from Lieut.-General John Northcott, C.B., M.V.O., on the latter's appointment as Governor of New South Wales. The C-in-C. has under him a Naval contingent (commanded by the N.O.I.C., Kure), an Air component consisting of squadrons from all four countries, and an Army component.

Headquarters, B.C.O.F., is an integrated H.Q., on which members of the various nations and Services serve irrespective of the cut or colour of their uniforms. Thus the three senior staff appointments are Chief of Staff (a Royal Australian Air Force Air Vice-Marshal), Brigadier, General Staff (British or Indian Army, but temporarily filled by a New Zealand soldier) and Principal Administrative Officer (an Australian Brigadier).

Under this Headquarters there are five Army formations: the British and Indian Division, the Australian Brigade, the New Zealand Brigade, an integrated Base at Kure under an Australian Brigadier, and a Sub-Area at Tokyo under a New Zealand Colonel.

Tokyo Sub-Area is designed to administer such troops as are from time to time stationed in, or passing through, Tokyo. The Commander is also, *ex officio*, the Senior B.C.O.F. Liaison Officer with General Headquarters, the Supreme Commander for the Allied Powers, and with Headquarters, United States Eighth Army at Yokohama. The chief body of British troops in Tokyo is the guard battalion, for the twelve battalions in the Force rotate at monthly intervals to share with the Americans the duty of mounting guard over, among other places, the Imperial Palace.

Before turning to the tasks of the Force, it may be of interest to consider for a moment the make-up of the various Army formations. The New Zealand Brigade on first arrival were all experienced soldiers, as they came direct from Italy. They are now, however, being turned over very rapidly, and will soon consist almost entirely of men with between six and eighteen months service. The Australians are men specially enlisted for duty with the Occupation Force, and serve in Japan for not less than a year and not more than eighteen months. Some have war experience in the Islands, but gradually Pacific Stars are becoming harder and harder to find.

The troops from Great Britain started off with a high proportion of holders of the Burma Star, but the demands of release groups and, particularly, of repatriation after three years overseas are now making themselves felt. Replacements are scheduled to arrive, but presumably will be inexperienced when they do come. Finally, there are the troops of the Indian Army. These are by far the most experienced soldiers in Japan. The majority are long-service men, and a high percentage have seen active service in Burma or, in the case of the Mahrattas, in Italy. They include in their ranks, incidentally, three holders of the Victoria Cross, the only ones in B.C.O.F.

The first and most obvious task of the Force is to take its share in the occupation of Japan, and to destroy the Japanese war material in its area. The area now occupied by B.C.O.F. consists of the whole of Shikoku Island and the five most westerly prefectures on the main island. Other than Shimonoseki, the naval base of Kure, and what is left of Hiroshima, the area contains no large cities, ports or commercial centres, and is almost entirely agricultural or mountainous. Around Kure and the neighbouring islands of the Inland Sea there is an immense quantity of Japanese equipment to be destroyed, of which the most important are high explosives and poisonous gases in a deteriorated and extremely sensitive condition. The destruction of the more important dumps of explosives and gas, guns, etc., should be well on the way to completion by early 1947.

Military Government functions, and counter-intelligence, remain American responsibilities, although inevitably the co-operation between the tactical troops and the American organizations must be, and is, close. Generally the area, being predominantly rural, is a quiet one, and trouble-makers and black marketeers are almost invariably urban gentlemen who pay visits from the great cities immediately to the West.

The second task of B.C.O.F. is to uphold and enhance the prestige of the Commonwealth in the eyes of the Japanese and of our Allies. For this purpose, Tokyo is inevitably the Force's shop-window, for it is there that Allies are available to be impressed or otherwise, and it is there that the news agencies of the world, and Japan, are concentrated. Consequently ceremonial parades are relatively frequent in Tokyo. To date the chief ones have been a review by the C.-in-C. of the Australian battalion on duty and representatives of other units on Empire Day, and an admirably executed Trooping of the Colour by the 2nd Battalion, The Dorsetshire Regiment, on the anniversary of the Battle of Plassey. It was a curious coincidence that the Dorsets, with their Honour of "Primus in Indis," should be the first regiment from the United Kingdom to do a tour of duty in Tokyo.

Finally, the C.-in-C. of B.C.O.F. is temporarily responsible for the administrative support of all British nationals in Tokyo. It is difficult to give a list of these, but the United Kingdom Liaison Mission, housed in the (undamaged) British Embassy, is the largest. In the Canadian Legation are, at present, the British members of the International Prosecution Section, engaged in the trial of the major war criminals. Mr. MacMahon Ball, from Australia, represents the Empire on the Allied Council for Japan, and there is a growing number of representatives arriving from all parts of the Commonwealth. These, together with their staffs and, except in the case of the Army, their families, amount to a considerable total, and their requests for accommodation, recreational facilities and special supplementary rations—varying from extra Scotch whisky to baby foods—are now laid somewhat unexpectedly at B.C.O.F.'s door.



## COAL IN WAR

By COLONEL W. R. GORDON, O.B.E., late R.A.S.C.,  
formerly Deputy Chief, Solid Fuels Section, SHAEF

**T**HE importance of coal in war has been largely overlooked, in a military sense. Despite its influence on the North-West European Campaign of 1944-45, it is doubtful whether its position in the strategical and strategico-economic spheres is yet fully appreciated. While complete information on this topic is still not available from all theatres of the late war, there is yet sufficient data from which to draw certain conclusions and some lessons for future staff guidance.

### HISTORICAL BACKGROUND

Up to the end of the Middle Ages and until the beginning of the industrial era coal played little part in the life of nations, either in peace or war. Until, in fact, the introduction of steam at sea and railways on land, coal played but an insignificant role in naval or military matters. Apart from the blacksmith, the armourer or the gunsmith—who doubtless needed forges to shoe horses, make and repair armour and weapons, as well as manufacture and fit metal parts to wooden ships—there could have been little need for fuel ashore or afloat. Even then charcoal must have been largely employed for those purposes. Navies and armies doubtless needed fuel both for heating and cooking, but the soldier of Marlborough's day, for instance, either wintered in comfortable Flanders' billets or else foraged for wood to burn.

Until the middle of the last Century it may be said that, despite the growth of industrialism from the latter end of the XVIIIth Century onward, coal played only an indirect part in warfare. It must be remembered, however, that without the growing French factories behind him Napoleon could not have clothed and equipped the large armies of French and satellite nations with which he overran and held down Europe for over twenty years. Again it was industrial power, based upon coal, which enabled Britain to clothe and equip, not only her own armies and navies but also those of her allies, throughout the Napoleonic wars. Even more important still, it was the wealth derived from that industrial power which made it possible for Britain to finance those wars and subsidize her allies at the same time. But, even yet, the direct contribution of coal in military affairs was small. Adequate coal supplies, for instance, had they been possible, might have saved the bulk of the Grand Army in its retreat from Moscow.

### COAL AND NAVAL POWER

From the American Civil War until the end of the Kaiser War coal supplies dominated naval strategy. Because the new dependence of fleets upon coal restricted their sea-keeping capacity, Britain built up a network of coaling stations all over the world where not only warships but also merchant vessels could replenish their bunkers. Not until the introduction of the "Queen Elizabeth" class of battleship in 1915, did the British Navy begin to turn from complete dependence on coal to similar servitude to oil fuel. Between the Kaiser and the Hitler Wars coal declined still further in importance at sea, for technical reasons which need not be discussed here. Not only did the navies forsake coal for liquid fuel but also the world mercantile marine began to make a similar conversion. Whereas in 1913 coal-fired merchant ships represented 87 per cent. of the world's shipping tonnage, this percentage had declined to some 49 per cent. in 1936. It is more than likely that the future trend

of marine construction will be more and more towards oil propulsion, either by oil-fired boilers for high speed passenger ships or by Diesel engines for cargo vessels. Coal will find a narrowing sphere at sea for tramp steamers and cargo liners, where operating costs are all important and where the usually cheaper coal may be preferred to the more expensive, though thermally more efficient and otherwise more convenient, oil fuel. Coal, however, may hold its own afloat in coastal and fishing vessels belonging to countries with coalfields near the seaboard. But, though in the last war bunker coal was an important item to be supplied both by the British Admiralty and Ministry of War Transport, nevertheless it is an item likely to be of diminishing importance in future wars, so far as shipping is concerned.

#### INFLUENCE OF COAL ON LAND WARFARE

On land, coal has played an important direct and indirect part in all wars from 1860 onward. Without coal to make steel and generally equip, arm and maintain the ever-increasing size of the armies participating in successive wars, it would not have been possible to conduct those wars on a scale of national conscription and world-wide activity.

Coal may be said to have won the American Civil War. It was the good fortune of the North to be industrialized and to possess the coal to feed those industries so that the Federal forces could be equipped in such numbers as, eventually, to overwhelm the Confederates, despite their interior position and other initial military advantages.

Moltke did not beat the Austrians and the French at Sadowa and Sedan, in succession, merely by the use of the needle-gun and the field telegraph. To effect the quick mobilization desired by the Prussian General Staff, the German network of strategic railways, fed by coal, enabled superior forces to be detoured close to the points of first advance. Such movements in those days, of course, could proceed, comfortably and expeditiously, undeterred by any threat of attack from the air.

Two examples stand out in which coal played a predominant part in maintaining armies far from their main bases. In the first, without coal for steamships and railways, it would have been impossible for this country to have landed and maintained sufficient forces in South Africa to defeat the Boers. In the second it is clear that, though the army concerned was defeated, coal was the principal means for maintaining the Russian army at the eastern end of the Siberian railway during the Russo-Japanese War.

In the Kaiser War, the German possession, during four years, of the major part of the northern French and the whole of the Belgian coalfields greatly hampered the Allies and gave the Germans a corresponding advantage. Throughout that war not only had Britain to export coal in order to maintain her armies in Northern France, but she had also to provide coal for the French munition and other industries.

#### SCIENTIFIC USES OF COAL

Before going on to discuss the part played by coal in the late war and the staff organization set up to deal with it, the chemical aspect must be mentioned. Coal derivatives obtained from the carbonization, hydrogenation and synthesis of coal or coal-tar have provided in varying degree explosives, gases, fuels, dyes, medicines and a host of products without which modern war could not be conducted. A large part of Germany's resistance to Allied attack was attributable to her development of oil and petrol from coal by the Bergius, Fischer-Tropsch, and other processes.

By the end of 1943 it was estimated that Axis Europe produced 5.7 million tons of synthetic liquid fuel annually. Of this total 1.5 million tons came from tar recovery, mainly in the Ruhr coke oven plants. Aviation fuel and lubricating oil were produced at the Leuna works, near Leipzig, from brown coal processed mostly by the Fischer-Tropsch method.

It was upon these plants almost as much as upon her stocks of imported oils and upon the Hanover and Austrian oil-fields that Hitler depended for the refuelling of the Luftwaffe and the Panzer divisions in his early military successes. In the final assault on Germany the destruction of these synthetic oil plants and the Ruhr coke ovens did much to hamstring the German armoured and air forces.

#### COAL AND THE BRITISH ARMY

Although there had been in the Supply and Transport Directorate in British G.H.Q. during the Dunkirk campaign, and in the Civil Affairs section of Allied Force Headquarters in the North African and later Italian operations, small staff sections dealing with coal problems of a military nature, it was not until September, 1944, that the size of the subject compelled SHAEF to organize coal production and distribution in N.W. Europe on a sufficient scale to make intelligent military control possible.

Armies are now, P.O.L.<sup>1</sup>-minded but it is sometimes forgotten that military railways, despite the advances made in air dropping of supplies or in road transport development, are the most rapid and reliable means of supporting an army in the field. Heavy military stores, required daily in large quantities, are most easily moved by rail and generally hauled by coal-fired locos. where local coal mines are contiguous to the lines of communications. In such circumstances it is preferable to use coal rather than oil, which may have to be imported and is wanted so urgently and in such great quantities by air, armoured and motorized forces. In this connection it is interesting to note that, even when locomotive coal was in such desperately short supply in N.W. Europe in the Autumn and Winter of 1944-45, the Director of Military Railways at SHAEF turned down the proposal to convert locos. to oil because the existing engines were unsuited to burn fuel other than coal and because the use of liquid fuel meant installing tanks, pumps, pipes, etc., at refilling points and this work could not be done quickly. These considerations would, naturally, have been outweighed were the campaign to have taken place in an oil-producing country.

But, quite apart from military railways, coal has many other military uses. Steam dredgers, tugs and cranes, electric power stations, army workshops, some field bakeries and military hospitals each need coal at all times of the year. Once the colder weather begins, all units require coal for heating, although the ration of 4 lbs. per man per day, in the recent N.W. European campaign, often had to be eked out with wood or, in the case of large headquarters, compelled to use big heating and cooking installations, the daily allowance had to be supplemented. It was fortunate in the circumstances that both the British and American armies used oil for cooking since coal was in such extremely short supply.

But over and above these direct military requirements there is also the provision of coal for industries such as steelworks, boot and clothing factories, laundries and a host of other agencies doing essential work for the armies. It is exceedingly

<sup>1</sup> Petrol, oil, lubricants.

difficult, at times, to decide priorities as between these various claimants for a strictly limited quantity of fuel. Then, again, the peoples of liberated or conquered regions have to be allowed some modicum of transport, power, light and heat to prevent disease and unrest. It is, therefore, in practice impossible to divorce military, quasi-military and essential civilian requirements from one another. They have to be co-related to such supplies as are available and coal has to be doled out to the most urgent types of consumers by one central agency which can envisage and control the whole problem.

These considerations and their implications were not fully appreciated at the War Office, in the higher levels of SHAEF, at 21 Army Group, or in the Communications zone of the U.S. Armies when the initial landings took place in June, 1944. Possibly the only quarter where the immensity of the European coal problem under military control was envisaged, outside the tiny Solid Fuel Section in SHAEF itself, was in the Solid Fuels Branch of the War Department in Washington.

#### SHAEF COAL CONTROL IN EUROPE

In March, 1944, the SHAEF section was set up as a part of the Petrol and Fuel Branch of G.4 Division. Up till late August its personnel, consisting of one British and two American officers with two clerks, could only plan and advise. The section, in conjunction with S.T.7—the appropriate War Office branch, with 21 Army Group and with First U.S. Army Group, planned requirements up to D+270 day. It was clear that the Normandy landings would take place far from any coalfields and, according to the general plan then prepared, it looked as though it would not be possible to draw from the northern French coalfields until D+180 day or thereabouts. Because it was feared that, as in the Kaiser War, the Germans would destroy the coal mine shafts, arrangements were made prior to the landings to earmark sufficient colliery equipment to produce three million tons of coal. This “first aid” equipment consisted of portable winding engines, wire rope, pit props, electric pumps, etc., and the list, containing a host of items, was produced in conjunction with a consulting mining engineer with great experience of the Nord and Pas-de-Calais coalfields, both during and since the Kaiser War. In the event none of this material, except the pit props, was required, for the Germans had to retreat from France, Belgium and Holland with such speed as to leave the mines in our possession fortunately intact.

During the first forty-one days of the invasion all coal and coke, primarily for hospitals, bakeries and workshops, was landed in 80 lbs. sacks over the beaches and delivered by DUKW into the dumps of the Rear Maintenance Area. In that period loco. coal was no great problem, but as soon as the break-out at both Avranches and Caen occurred in late July, the question became an increasingly urgent and important one. The main difficulty was an almost entire lack of suitable deep-water berths at which to discharge cargoes. Using small tidal ports meant ships drawing not more than 12 ft. in many instances, and such vessels were in extremely short supply. Due to all too effective demolitions and to the sowing of “oyster” mines it was eight weeks before Cherbourg could be regularly utilized for coal discharge. At one stage resort was had to half-filling railway wagons which would otherwise have been shipped to the Continent empty, despite the delay of sending the wagons first to British collieries to load.

Eventually the coal-shipping programme entailed the use of about 225,000 tons of shipping, and discharges crept up month by month to 250,000 tons of coal monthly. The ports utilized were St. Brieuc, St. Malo, Granville, Cherbourg, Caen, Rouen



and Dieppe. To administer this programme the Ministry of War Transport set up a committee on which the War Office, SHAEF, Ministry of Fuel and Power, 21 Army Group and the U.S. Army were all represented. Though discharges in the early months continually failed to reach the monthly targets set, and thereby caused much vexation to the French, this Committee improved communications, loading and discharge arrangements to a great extent.

By September, 1944, it had become apparent, at higher levels in SHAEF, that this coal business was a big one and also that it required technical knowledge. Accordingly the G.4 and G.5 (Civil Affairs) coal sections were amalgamated, with a U.S. full Colonel in charge and with a British Lieut.-Colonel (later a full Colonel) as Deputy. The most immediate benefit gained from this reinforcement of strength lay in the provision of qualified mining engineers, some of whom had already seen military service in the Alaska coal mines.

The section grew, belatedly, during the next six months until there were over 400 British, American, French, Belgian and Dutch officers and men on its strength. It was organized as a headquarters (transferred to Current Operations Branch, G.4 Division), with sub-sections eventually for each liberated country and for Germany. The headquarters of the Section was itself divided into sub-sections to deal with production, including the supply of mining equipment—a most urgent and important matter, still not fully solved in Europe—requirements, shipping, internal transport, distribution and statistics.

In each liberated country there was set up a "working party" on which were represented the Government concerned, SHAEF and the various military and civilian consuming agencies involved. The sub-sections of the SHAEF Solid Fuels Section worked out the requirements of each country, submitted those to the headquarters, successively at Versailles, Rheims and Frankfurt-am-Main and, after approval by headquarters, allocated the available coal at "working party" meetings.

Coal was allocated on a definite priority basis in which locomotive coal came first, then other military and quasi-military fuel users, while civilian purposes such as power, gas and industry received any supplies left over. During that first winter of liberation there was never any fuel available for civilian domestic heating.

But the Section's work went much further than that. As each coalfield, such as the Moselle, Saar and Ruhr, was uncovered, mining engineers went forward to take possession, prevent flooding, conserve coal stocks and try to get the pits working again as soon as possible. In every coalfield there was, inevitably, shortage of pitwood (of which roughly one ton was needed for every thirty tons of coal mined), of labour, mine supplies, transport and food. The Section had to arrange for pitwood deliveries, prise food for miners out of Army supply dumps, and to see that miners had bicycle tyres, soap, clothing, boots, houses and buses to go to work.

The job of supplying coal ashore wherever it was needed, from the North Cape to Marseilles, would have been no mean task in peacetime with all the facilities of peacetime communications available and with adequate, experienced staff at all points; but in war, with most imperfect communications and with a staff hurriedly got together, the task was unremitting and difficult. It was not easy, at that stage of the War, to obtain British officers with suitable technical experience of coal production, distribution and utilization, while the American officers were often civilian experts with no military background.

## COAL IN FUTURE WARS

In our Army, coal has always been regarded as a small part of the responsibilities of the R.A.S.C., which has considered it a twin subject of barrack maintenance. It is to be hoped that in future wars, so long as coal remains an important primary source of energy, there will be an adequate technical staff in the War Office and in the Headquarters of the Army in the field to tackle the problem efficiently and intelligently. But the matter should not stop there. To deal with the manifold problems of port discharge, distribution, utilization and production there should be (a) more effective technical control at ports to see colliers quickly discharged and the coal sent to the correct consumers, (b) supervision at Army and even down to Corps level over requirements, allocations, utilization, etc., within Army or Corps Area, with equivalent control in L. of C. areas, and (c) teams of mining engineers ready to get production going again rapidly in uncovered mines and to minimize the effects of sabotage.

Experts in coal production, distribution and utilization should be earmarked and made to train together in peace so as to prepare for the coal problems of the next war. There is plenty of material and experience upon which they can draw now. In a few years much of it may be lost.

## MATERIAL RESERVES

By LIEUTENANT-COMMANDER R. F. COLVILLE, D.S.C., R.N.

"GIVE us the tools and we will finish the job." This from any statesman in any war would be a confession that his country was dangerously unprepared; how unprepared we were for the war from which we have just emerged is too common knowledge to require amplification.

Before the War, the Services were able to pay some attention to the provision of reserves of personnel—inadequate attention, perhaps, yet still *some*; but the attention paid to material reserves was so slight as to be fantastic. No sane General would deliberately go into battle without adequate ammunition, yet Britain embarked on a war, which it had generally been foreseen would be a total one, without (as judged by the result) any real understanding of what commitments it implied as regards material.

Admittedly the maintenance in peace time of huge stores of equipment which might never be used would be so uneconomic that it could not receive Treasury approval; indeed the cost would be quite prohibitive. But, if "never again" is to mean anything, insure we must. What, then, is the alternative? How are we to be so prepared that equipment will be ready as soon as the men are trained to use it, and how are we to ensure that men under training have the equipment with which to train?

Planning to enable industry to switch rapidly from peace to war requires as much, if not more, care as that to create effective manpower from reserves. The ideal would be that industry could be put on a war footing by merely giving the executive order to put the plan into effect; then the labour force of the country would start with the least possible delay to produce standardized modern equipment.

But standardizing modern equipment sounds easier than it is. To obtain standardization requires a firm policy from the Services on the equipment they wish produced. The more that inter-Service standardization can be obtained the easier will the task of large scale production become, and if normal commercial practice can be made use of, so much the better.

One object to be kept in view is that the plan should make provision for the allocation of material. For instance, bakelite, which in peace time may be in use for semi-luxury goods, would be earmarked for the factories which would require it for war time production. War has become a struggle between mass production and technologies, and a quantity of the good is better than an insufficiency of the best.

On the material arriving at the factory, there must be no delay in using it in the manufacturing process. This demands in its turn a trained labour force, with the necessary tools and gauges to hand. It also implies placing a large number of dormant contracts so that the firms to be engaged in "munition" production, having been given their initial target figure, can plan their war-time labour force accordingly. In principle, in peace time a large dispersion of Service contracts, even if not immediately the most economic method, is necessary. Reserves are by their very nature expensive, for they are not immediately productive; but they are a form of an insurance, and like all insurances (so long as the eventualities against which they are taken out do not occur) are uneconomic.

Moreover, to give each firm a chance of providing as much as possible of their labour force with the essential experience in production of their allotted dormant contract, the peace-time contracts may have to be paid for at a slightly higher rate in order to allow for a less profitable and slower rate of production than would be necessary for the most efficient solution from the purely commercial standpoint. This would allow labour to be used in rotation on the manufacture of Service equipment, returning on completion of their "training" period to the ordinary commercial production which is the peace-time mainstay of the firm. Such a policy would be industries' direct contribution to the preparation for defence.

To allow material to be deployed immediately on the factory front requires also the availability of a sufficiency of drawings and the completion of at least the "jigging up" process. The provision of production tools, jigs and so on, is, however, a far less expensive business and less loss is incurred by their scrapping or modification as the equipment for which they were designed becomes obsolete than is the scrapping of vast numbers of completed goods. The existence of large stores of equipment, unused and in relatively good condition, will have the added disadvantage of tending towards a psychological objection to the sufficient production of newer designs.

It is, however, considered that *slight* improvements in design are not as a rule worth incorporating since they are more than overbalanced by the lack of standardization which they are bound to introduce. To have a vast number of minor equipment details a little different from each other means an immense increase in the outlay of the maintaining labour force, a similar unproductive increase in the labour force producing spare parts, and an increase in the supply staffs handling such spare stores; for each detail not only requires to be understood by the maintaining force, but also requires a slightly different manufacturing process, and slightly different tools to make and service it. This multiplicity of details adds to the training problem of all labour connected with it, and makes more complications for the operational, planning and supply staffs.

The correct procedure, it is contended, is to work on a definite plan of research, design and production, freezing design say, every six years, and trying to maintain large units of the forces homogeneously equipped, and modifying each of such units in fixed rotation and in direct relationship to a planned research and development cycle.

There may be occasions when scientific research produces something so novel that the use of it will cause a revolution in warfare, and hence its immediate production, considered together with the current political situation, may render a departure from the routine cycle desirable. Such occasions must be accepted, but they should not in peace time be entered upon lightly and must be regarded as emergency measures. Usually it will be better to accept the jigging up "out of routine," produce very slowly and equip each unit in accordance with the refitting cycle.

In many ways industry requires to be taken far more into their confidence by the Services than is normally the case in peace time. Key men in industry should be given some Service training (by agreement between the Services and industry) in some "industrial reserve" capacity. If such persons are given a chance of seeing how the equipment they produce is used, they may be able to suggest to both designer and user how improvements could be made either in the inherent quality of the weapon or in methods which, whilst in no way disturbing its efficiency, may ease production or the use of important raw materials.



To-day is an age of increased education, and in total war all intelligences must be welded together to give the strongest mental structure to further the common aim, which means victory. The most effective welder is the personal touch. Producing a shell for Bill to put in a gun is a much more real thing than just producing a shell, and far more care is likely to be taken if Miss Y. feels that the nice young man she met the other day in the works canteen is depending for his life on the bolt which she is producing.

But not only should industry be encouraged to study the Services ; the reverse is also true : the Services should be encouraged to study industry. Service mechanics might be seconded periodically to factories producing the equipment which they normally handle and maintain. Regular officers might study factory methods and management with a view to incorporating better methods in the Services, and to enable them to understand how the officers and men who enter their Service during a war have been used to looking at things. This latter is an important psychological point : mutual understanding and appreciation of each other's background and the trials and tribulations which beset them are bound to improve team work. As an initial start, would it not be possible to send officers to a course at the proposed Administration Staff College in the same way that the Services exchange officers at the Staff Colleges ?

To recapitulate : the production of material reserves depends upon the close integration of industry and the Services. Labour forces must be rapidly mobilized to use tools (already prepared) on material which has been previously earmarked so as to produce an increased flow of equipment from the assembly lines. As a companion to this, full understanding must exist between industrial producers and Service users, and this can best be achieved by close liaison between the two in peace time.

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## THE SECOND SEDAN

By LIEUT.-COLONEL ALFRED H. BURNE, D.S.O.

**F**EW of us are likely ever to forget the pained surprise, even astonishment, with which we heard on the nine o'clock news on 14th May, 1940, that the Germans had reached Sedan. Still worse news was to follow a few days later—a clean break-through, and the Germans racing towards the coast. How had it all happened? We did not know. The silence of the German occupation descended like a veil, and extremely few facts regarding the disaster filtered through.

One book that threw some light on the problem was *The Riom Trial*, by Colonel P. Tissier,<sup>1</sup> but it attracted curiously little notice at the time: we were too much absorbed in our own trials. Occasionally an article in one of the enterprising American Service periodicals reached this country, but the position remained "obscure." A flood of new light has just been thrown on to the subject in a book entitled *The Six Weeks War* by Theodore Draper.<sup>2</sup> Though the publisher's notice does not say so, the author appears from internal evidence to be an American. He has, with great assiduity, collected and digested a mass of material, newspaper articles, reports, etc., which have never been published in this country, and out of this material he has produced an admirably coherent account which goes far to satisfy our curiosity and to answer our questions. The brief account that follows is based primarily upon these two books.

### THE ARDENNES

The first and obvious question is: How did the French come to neglect the Ardennes, and to assume that it was "impenetrable"? Such an idea had been rife before the 1914-18 war, but the history of that war had shown how erroneous that idea was. It was indeed surprising that even before 1914 that idea should have held sway in France. Even a young English subaltern at the time (the present writer) was aware of the true nature of the country, of the great number of well-metalled roads, and considerable open spaces. No surprise need have been felt at the speed with which the Germans traversed that region in August, 1914; still less should surprise have been evinced by their repetition of the performance in 1940. Who, then, lulled the French into a false sense of security?

The answer, according to *The Riom Trial*, is clear—and surprising. The chief culprit was none other than Marshal Pétain! Let me give chapter and verse. In March, 1934, when Minister of National Defence, he reported as follows to the Senate Army Committee:—

"Starting from Montmédy are the forests of the Ardennes. They are impenetrable if proper dispositions are taken . . . As this front would have no depth the enemy could not enter into it; if he does, we shall catch him as he comes out through the forests. Hence this section is not dangerous." One is forcibly reminded of the secret German report on the Hindenberg Line in 1918. Referring to the Bellenglise sector where the 46th Division ultimately broke through, the report read: "This sector is very strong. The English will hardly attack here."

The natural result of this "ex cathedra" pronouncement was that the defences of the frontier from Montmédy northwards were neglected, until the War had actually started. I will deal with these defences later.

<sup>1</sup> Published by Messrs. Harrap in 1942.

<sup>2</sup> Published by Messrs. Methuen & Co., 12/6.

Reference to Marshal Pétain brings up the question as to why the Maginot Line stopped short at Montmédy. We find that as far back as 1927 the Superior War Council, of which the Marshal was president, declared: "It is not possible to establish a direct fortification of the northern frontier. The shape of the frontier, the existence of industrial concentrations, and the proximity of Belgium are so many difficulties. Therefore, the defence of the northern frontier consists either in advancing into Belgium or in organizing a defence behind the industrial area of the North."

Pétain went a step further in 1932 when he laid down: "The point is not to organize a defensive front, but to prepare a mobile force near the frontier and make sure of its swift advance into Belgium." This is the germ of the famous Plan D.

#### FRENCH WAR DOCTRINE

But we have not finished with Pétain. Just before the War he seems to have been influenced by a book, written by a St. Cyr professor, General Chauvineau, entitled *Une Invasion: Est Elle Encore Possible?* This book was permeated through and through with the defensive spirit, and the Marshal wrote a preface for it, dotting the i's and crossing the t's in unmistakable fashion. A copy of it was officially distributed to all the French Army chiefs only a few months before the outbreak of the War. The book was discreetly withdrawn from every public library in France shortly before the Riom Trial. And no wonder! For the preface describes precisely, and advocates, the supine French inactivity at the critical (for the Germans) period of the Polish campaign. Colonel Tissier rightly reproduces it almost *in extenso*. I quote a few extracts, which will show its trend:—

"The defensive has become so powerful that the assailant needs an immense superiority to enable him to open an attack. General Chauvineau calculates that the attack must have three times as many infantry, six times as much artillery, twelve times as much ammunition, if it is to master the defence . . .

"France must be careful not to open the campaign with a strategic offensive. It would only mean staking the country's fate on one throw of the dice . . . The essential condition of an effective cover is the establishment of a 'continuous front' immediately behind the frontier line, and employing fortified works . . . To seek to defeat the enemy without first having taken all the steps calculated to block his offensive . . . that, says General Chauvineau, is to play poker with the country's fate . . ."

So it was to be a war devoid of risks, a sort of limited liability war. The General might almost have been reading some of our defeatist pre-war literature!

But worse is yet to come. The very weaknesses and faults in the French tactics are actually recommended in this egregious preface, in particular the action of armour and air forces. Let us read on:—

"On the ground hitherto every invention has been as a rule more favourable to the defence than to the attack . . . Tanks are very quickly out of date and difficult to re-model. These properties are all in favour of their initial use to halt an attack, or in favour of their use in counter-attack upon an assailant . . .

"The direct action of air forces on the battlefield is problematical. . . It is by means of indirect action against the back areas that the activities of the air forces will be most effectively exercised . . ."

This explains the utter surprise with which the French experienced the offensive thrusts of the German armour and the swoops of their dive-bombers. No wonder the book was afterwards suppressed!

In his advocacy of the "continuous front" all along the frontier Pétain seems to have changed his ground somewhat from his 1927 attitude. But it is more apparent than real. He probably envisaged a defensive line being prepared by the Belgians on which the French Army could anchor. In any case, it does not affect his opinion that the Germans would not advance through the Ardennes, and even if it had, there would not have been time to rectify the defensive system before the War broke out only a few months later.

#### PLAN "D"

It must be admitted that the problem of the right plan to adopt was not an easy one for the French (or ourselves). It was complicated by the equivocal attitude of the King of the Belgians, and by the uncompromisingly strict neutrality of the Netherlands Government. (The present writer was arrested as a spy only a few weeks before the War on a perfectly innocent visit to the Dutch coast.) Only six days before the German invasion the Dutch Foreign Minister refused peremptorily to allow us any silhouettes of Dutch planes. It was thus quite impossible to form a firm estimate of the conditions in which we might have to meet a German offensive, but it was believed that ultimately both Holland and Belgium would call upon us for help. It was therefore only reasonable to envisage the contact taking place on Dutch and/or Belgian soil. The French and British therefore went ahead with their plans based on this assumption.

There were several steps in the gradual formation of Plan "D." The first step was taken in September, 1939, when it was proposed to occupy the line of the River Scheldt.<sup>1</sup> Thus the suggested line would be markedly concave, affording us the advantages conferred by exterior lines should the enemy advance against this line. The weakness of it was that it ran with the sea unpleasantly close behind our back (see sketch-map). The second step was taken in October, when the proposed line was advanced to the River Dyle, running South from Antwerp towards Namur. The third step was taken in November, when it seemed likely that Holland would be involved in the War and would call to us for help. "The Holland Variant" allowed for the Seventh French Army advancing into Holland, thus extending the line northwards.

This was the line envisaged by Plan "D" (and shown on the sketch-map). Since the defeat of the Allies, it has been widely criticized, but it is hard to see what other plan could reasonably have been adopted under the circumstances. If Germany invaded the Low Countries and they called to us for help, we could hardly refuse it them. Moreover, though we probably were not aware of it at the time, the Belgians in 1939 abandoned the idea of making the Albert Canal (on which they had lavished large sums) their main line of defence, but were constructing a "K.W. Line," which practically and fortunately coincided with our line under Plan "D." It ran along the Dyle to the East of Brussels, and thence to Namur. Along this sector an anti-tank line had been constructed. There was ample reason for this. I recently motored along this line and was impressed by the ideal tank

<sup>1</sup> Mr. Draper uses the spelling "Escault" throughout (in common with our official reports, which accord it the French spelling where it flows through Belgium, and the Belgian spelling (Scheldt) where it flows through Holland!) Our ancestors spelt it "Scheldt" throughout its course.



country that exists practically all the way. It should be remembered that we did not seriously defend this line, owing to the German break-through further South; consequently it is impossible to say whether we could have held the Germans along it. Personally I believe we could have done so; but this is not the place to argue about it.

This, then, was the plan that was put into operation on 10th May, 1940.

#### THE SEDAN DEFENCES

Before dealing with numbers and dispositions let us glance at the state of the defences in the critical sector, that of Sedan, on 10th May. Mr. Draper quotes from a report made by two French Deputies in March, 1940. It is a devastating document. Here are some extracts:—

"In the Sedan region the Ardennes forest and the Meuse are counted upon heavily to protect Sedan, and these natural obstacles are perhaps given an exaggerated importance. In this sector the defensive preparations are rudimentary, not to say embryonic. On the road from Bouillon in Belgium to Sedan, as at other means of access into France, the defence consists of blockhouses which would only be able to resist for a short time. The barbed-wire emplacements, the prospective destructions and the resistance of the strong points cannot produce a delay of more than one hour. The Germans showed in 1914 that they were past-masters in the art of utilizing the cover of forests, and some day we may be taken by surprise from this direction. Our enemies may avoid the solid, strong point of Montmédy and 'ooze' in the direction of Sedan, a particularly weak point in our defensive system. . . .

"In the last war the Germans several times crossed the Marne, which in many respects offers greater difficulties in getting over.

"One shudders to think what would happen in the event of a German attack in this sector."

How unerringly and startlingly prophetic is all this! When I motored from Bouillon to Sedan some years previously I could see no defences whatever. Mr. Draper informs us that the blockhouses were small, four or five men garrisoning each, and that low-quality men were selected for them as a form of punishment. Under the circumstances it is not surprising to learn that, when the test came, many of them were immediately abandoned by their garrisons.

From the Belgian frontier northwards along the Meuse to Namur the French could not, of course, construct any defences, nor did the Belgians. Reliance was placed on the natural strength of the river line.

#### DISTRIBUTION OF FORCES

Colonel Tissier gives the strength of the French Army in 1940 as 115 divisions; 31 active, 20 Reserve A, and 16 Reserve B, these last being low-quality aged men, badly equipped. There were also 13 Fortress divisions garrisoning the Maginot Line, 5 Light Cavalry, 3 Light Mechanized and 3 Armoured, making a total of 91 divisions. The remaining 24 divisions were stationed abroad. The northern end of the line was allotted the greatest strength and quality, the Ardennes sector the weakest. But perhaps the most remarkable feature of the distribution was that the reserve of 32 divisions was stationed equally along the whole line, irrespective of whether they were covered by the Maginot Line or not. Thus, the main argument for a defensive line—that it economizes in troops—was ignored.

Let us now look at the Sedan sector in somewhat greater detail. The first thing we notice is that the boundary line between two armies—the Second on the right and Ninth on the left, ran practically through Sedan. Next, each of these armies placed its lowest-grade divisions in this sector. Thus there were four Reserve B divisions in line consecutively, the 61st and 53rd of the Ninth Army, and 71st and 55th of the Second.

None of these unfortunate divisions appear to have had any anti-tank guns, and they were ill supplied with A.A. guns, tanks and planes.

Then, the Army Commanders: General Corap commanded the Ninth Army. Draper describes him as "Sixty-two years old. A Colonial specialist; he was so short and fat that he had trouble in getting into a car. Almost his entire career was spent with native regiments in Africa."

The Second Army Commander was General Huntziger, who was "trim and erect in appearance, but his reputation was made in foreign missions. He had served in Syria, Indo-China, China, Brazil and Madagascar, and in none of these places was a first-hand knowledge of Panzer divisions available."

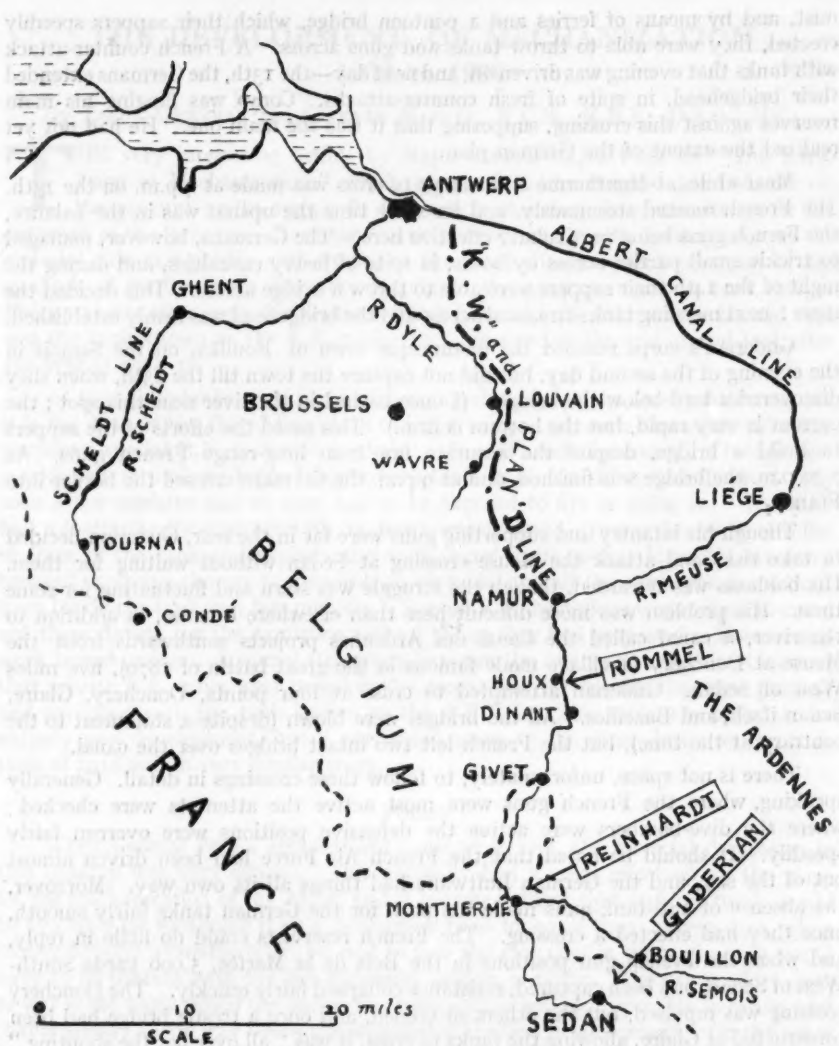
Altogether the prospects were not too bright for the defenders of the direct route to Paris.

#### THE BREAK-THROUGH

After what has been said, no long explanation of how the Germans managed to break through this flabby line should be necessary. As soon as news was received of the German invasion of Belgium at 6.30 a.m., 10th May, Corap's Ninth Army rushed forward to the line of the Meuse from Namur, through Dinant to Givet on the French frontier, while cavalry of the Second Army entered the Ardennes along the roads trodden by their fathers in August, 1914. On the 11th they encountered the Germans in the same places—Neufchateau, Bertrix, Paliseul—and met with the same fate as twenty-six years previously. On the 12th they were flung back to the line of the Meuse and Semois.

It is time to refer briefly to the German plan. The High Command were probably aware that Sedan formed the dividing line between the Ninth and Second Armies, an additional inducement to them to make that point their main objective. But they, wisely, did not put all their eggs into one basket. They used three "baskets." Against Sedan were directed three Panzer divisions of Guderian's corps. Against Monthermé, 18 miles further North, was set Reinhardt's corps of two Panzer divisions; whilst at Houx, three miles North of Dinant, was thrown a single Panzer division under Rommel.

This last was, in point of fact, the first to reach the river, so we will relate its progress first. At this point there is a rail and road bridge, while a little upstream is a weir. On the evening of the 12th three scout cars reached the river at Houx and attempted to rush the bridge, which was still intact. But the French blew it as the leading car was half-way across, and for the time being they were safe. But during the night the Germans reconnoitred the weir, and at 5 a.m. next morning, finding that it was unwatched, they managed to file across in single file. (The present writer reported as far back as 1912 that this weir, not marked on the map, formed a possible crossing place for the Germans in the event of war. They used it in 1914 and, as we have seen, once again in 1940.) The railway here runs alongside the river, divided from it by a high stone wall. This was under fire and the Germans were temporarily held up. They were, however, assisted by an early-morning river



THE SECOND SEDAN

mist, and by means of ferries and a pontoon bridge, which their sappers speedily erected, they were able to throw tanks and guns across. A French counter-attack with tanks that evening was driven off, and next day—the 13th, the Germans extended their bridgehead, in spite of fresh counter-attacks. Corap was flinging his main reserves against this crossing, supposing that it was the main one. He had not yet realized the extent of the German plan.

Meanwhile, at Monthermé an attempt to cross was made at 4 p.m. on the 13th. The French reacted strenuously, and for some time the upshot was in the balance, the French guns being particularly effective here. The Germans, however, managed to trickle small parties across by boats, in spite of heavy casualties, and during the night of the 14th their sappers were able to throw a bridge across. This decided the issue; next morning tanks streamed across and the bridgehead was firmly established.

Guderian's corps reached the picturesque town of Bouillon on the Semois in the evening of the second day, but did not capture the town till the 13th, when they discovered a ford below the bridge. (I once bathed in the river near this spot; the current is very rapid, but the bottom is firm.) This eased the efforts of the sappers to build a bridge, despite the accurate fire from long-range French guns. At 7.30 p.m. the bridge was finished, and at 9 p.m. the Germans crossed the border into France.

Though his infantry and supporting guns were far in the rear, Guderian decided to take risks and attack the Meuse crossing at Sedan without waiting for them. His boldness was rewarded, though the struggle was stern and fluctuating for some time. His problem was more difficult here than elsewhere because, in addition to the river, a canal called the Canal des Ardennes projects southwards from the Meuse at Donchery (a village made famous in the great battle of 1870), five miles West of Sedan. Guderian attempted to cross at four points, Donchery, Glaire, Sedan itself, and Bazeilles. All the bridges were blown (despite a statement to the contrary at the time), but the French left two intact bridges over the canal.

There is not space, unfortunately, to follow these crossings in detail. Generally speaking, where the French guns were most active the attempts were checked; where the dive-bombers were active the defensive positions were overrun fairly speedily. It should be noted that the French Air Force had been driven almost out of the sky, and the German Luftwaffe had things all its own way. Moreover, the absence of anti-tank guns made the path for the German tanks fairly smooth, once they had effected a crossing. The French reservists could do little in reply, and when the French gun positions in the Bois de la Marfée, 5,000 yards South-West of Sedan, had been captured, resistance collapsed fairly quickly. The Donchery crossing was repulsed, but the others succeeded, and once a trestle bridge had been constructed at Glaire, allowing the tanks to cross, it was "all over bar the shouting." It had taken just eight hours of strenuous fighting.

To sum up, by the morning of 14th May the Germans had firmly established bridgeheads over the Meuse at Houx, Monthermé and Sedan. Though Huntziger threw in frantic counter-attacks that day, they were piecemeal, hurriedly organized and unsuccessful (except at a point 12 miles South of Sedan). Owing to the faulty disposition of the French reserves it was found impossible to get up sufficient troops to the threatened points in time to prevent a break-through, and on the 15th the German dash for Dunkirk commenced. The battle was in essentials won. Superior training, arms, equipment, and, above all, generalship, had given the Germans a militarily well-deserved victory.



## THE DEVELOPMENT OF MECHANIZATION 1933 to 1939

By LIEUT.-GENERAL SIR GIFFARD MARTEL, K.C.B., K.B.E., D.S.O., M.C.

THE very interesting article by Major-General Capel Peck on "The Early Days of Mechanization," which appeared in the August Journal, carried the account up to 1933. In this article the story is continued up to the outbreak of the late war. Both these articles deal mainly with development on the material side and chiefly with tanks, as the great changes which occurred in the methods of warfare were due very largely to the progress made in tank design. There was one other early development which General Peck did not refer to, and that was the tank known as the R.E. tank which appeared at the end of and just after the War of 1914-18.

At that time tanks were faced with many obstacles in the enemy defences, and it is the duty of the Royal Engineers to assist troops over such obstacles. For this purpose a special R.E. tank was produced. It could walk up and lay a bridge over a 21-ft. gap or push an Inglis bridge over a 60-ft. gap. In either case the work only took a few minutes and no men had to be exposed to fire in doing so. The tank had a hydraulically controlled jib in front which could draw a heavy steel roller in front of the tank and explode anti-tank mines in its path. It could also carry forward explosive charges to demolish an obstacle, and all the work was carried out from inside the tank in a few minutes. Special R.E. battalions were raised to carry out these duties, but the Armistice arrived before they had been used. Most of this work lapsed owing to financial stringency between the two wars, but it is of interest that similar R.E. units were raised in the recent war for exactly the same purpose and equipped with the tank known as the A.V.R.E. This tank was hailed as an entirely new development, but it performed many of the same duties as the R.E. tank of 1918 and in very similar ways.

### POLICY

When General Peck's appointment came to an end, the financial depression in this country was very serious. This naturally had a great effect on all the plans for the mechanization of the Army, and it became evident that no large funds would be available for equipping it on a mechanical basis for some time. Even then, when money became available later, we had to face the fact that in peace time we would have to be content with the less expensive models of tanks. The army which goes to war is the army which the nation has been able or willing to provide in peace, and that is always a long way below the standard of the best in equipment. On the other hand, when war breaks out the army is equipped as early as possible with the best that the available labour and material can produce regardless of expense.

Two very important steps had, therefore, to be taken at that time. First of all, a decision had to be made as to what type of equipment would be used to equip our peace-time Army. In the case of tanks, this certainly meant something much less expensive than the best tanks that could be produced. Secondly, action had to be taken to develop in secret and thoroughly test out a small number of the very best type of tank on which we would go into production when war, or the immediate fear of war, loosened the purse strings. Germany had been following our work and obtaining all possible information about our tanks and other weapons. Her plans were perfectly clear: she constructed a great many light tanks and used them to

equip large numbers of formations. This enabled her to forge right ahead in mechanization as far as her peace-time army was concerned. She also built a moderate number of medium tanks which were thoroughly tested out by the troops.

Even Germany under a dictator could not afford these medium tanks in large numbers in peace time, but all preparations were made to go straight into production on this design when war broke out. With her splendid training and with large numbers of light tanks, she was all set for war and won great campaigns at the outset and, at a later stage, the new and improved equipment was flowing in to enable her to win further victories.

#### MEDIUM TANKS

On our side we were much less definite. The right equipment for our mobile armoured forces was a fully fledged medium tank of the 16-tonner type described by General Peck. In view of the financial position there was no hope of being able to obtain this and the General Staff were not in favour of being content mainly with light tanks in peace, as the Germans were doing, and waiting until our finances enabled medium tanks to be built. Hence we produced a cheap medium tank. It was designed by Messrs. Vickers and had all the genius that Carden put into all his designs, but it was not what was wanted. It was considerably cheaper than the 16-tonner, though much more expensive than the light tank, but it was hoped that perhaps we would be able to afford to build a fair number of those cheap medium tanks in peace time. It became known as the Valentine tank.

By 1936 the position we had reached was as follows: Very good three-man light tanks were being produced on the lines described by General Peck, but they now had a 7.9 mm. and a 15 mm. machine gun mounted coaxially and the weight had risen to 5½ tons. The armour was 12 to 14 mm. thick.

As regards medium tanks, the Valentine performed well, but was slow and nothing like up to the specification that was demanded for a medium tank. The threat of war was now such that funds were beginning to become available, but no one was prepared to spend great sums of money on equipping our Army with medium tanks of that type. If only we had pursued the development work of the 16-tonner we might well have had an excellent medium tank on which we could have gone into production at once. What a difference this would have made. As it was we had to set out *de novo* to produce our medium tank, for the original 16-tonner was now quite out of date and the Valentine came nowhere near meeting our specification.

#### OUR REQUIREMENTS IN 1936

By about the middle of 1936 we had a much clearer view of what we required as regards tanks. Before the end of the 1914-18 war we had a definite policy that two types of tanks were needed. Armies had always been organized in two main types of troops. The cavalry or mobile troops had the duty of feeling out ahead for the enemy, working round his flanks and attacking him where he was weak. The hard hitting troops which consisted mainly of infantry had the task, with the artillery, of holding or breaking through strong defensive positions. We saw quite clearly in 1917 that we would need two types of tank for these two roles and both types were beginning to appear in 1918. After the war this policy was forgotten for a time, but in 1936 we were quite clear that we needed a heavily armoured tank with a powerful gun for the slow, hard-hitting role and a much faster and well armed but less well armoured tank for the mobile role. In addition, a number of light tanks

were needed for reconnaissance. Some of us pressed hard that we should use large numbers of light tanks for this mobile role, at any rate as a start, but this did not meet with favour. It was, however, a great help to all concerned that our requirements could now be stated more clearly.

In the Autumn of 1936 some of us had had the opportunity of seeing the Russian manoeuvres. There we saw a very large number of medium tanks which were based on the design of an American inventor, Mr. Christie. The tank was a long way below our specification for a medium tank, but it had a very fine suspension and certain other good features. It looked as though a tank on these lines might form the basis for our medium tank. The Russians also had some heavy tanks very much on the lines of the tank described in the August number of this JOURNAL and called the Independent tank. The Russians were forming very much the same view as ourselves, namely that a fast medium tank was needed for the mobile work and a slower but more heavily armoured machine for the hard-hitting role. Our discussions with them on these subjects were full of interest.

#### THE CRUISER TANK

On returning home the most energetic steps were taken to obtain a model of the Christie tank. We considered that we could get great value from this even though we knew that we would have to change the whole design to make it suit our needs. This tank had not been adopted by the American Army, as the experimental models had proved unreliable, and so we were able to purchase an existing model from Mr. Christie in America. We had the tank on our trial grounds in less than two months, which was remarkably quick work for peace-time procedure. Lord Nuffield built a special factory to undertake this work and they went full speed ahead to produce the type of medium tank that we required.

In general terms the specification demanded for a medium tank at that time was on these lines: the main turret to be armed with one 2-pdr. gun and one machine gun coaxially mounted, and one more subsidiary turret to be provided to contain a second machine gun. The armour was only 14 mm. thick, but it was hoped to increase this to 20 mm. as soon as possible in order to keep out the bullets from anti-tank rifles and heavy machine guns that were becoming numerous on the battlefield. A very powerful engine was required so that the tank should attain a speed of between 20 and 30 miles an hour on the level, and the circuit of action on the petrol carried was to be 200 miles. This was the specification to which the firm of Nuffield mechanization had to work, but the problem bristled with difficulties. At that time rearmament was in full swing in the R.A.F. and the Navy. The Army had a very low priority. Under those conditions it was a formidable problem to produce large numbers of 300-h.p. engines, which were what we needed. In the end we had to make do with the Liberty engine, which had given good service in the past, but was out of date in many ways. The specification was a long way ahead of any tank that had yet been built. The tank weighed 20 tons and no tank of this weight had yet travelled at 30 miles an hour. All manner of problems arose as regards drive and transmission. This type of tank became known as a cruiser tank.

#### THE INFANTRY TANK

In the meantime we had to turn our attention to the second type of tank that was required. This tank, which was needed for the slower and heavier fighting became known as an infantry tank. While funds were very limited, a small and

very heavily armoured tank to take a crew of two men had been developed by Vickers and designed by Carden in 1935. In a way this was the prototype of the infantry tank that we needed, in much the same way as the light tank was really the prototype of the cruiser. But funds were now becoming available and a specification was prepared for a fully fledged infantry tank, which was on these lines. The main turret was again to carry a 2-pdr. gun and a machine gun mounted coaxially, but no additional machine guns were specified. The armour was to be 50 mm. thick, which was far thicker than any armour that had ever been fitted to a tank. A speed of 10 miles an hour was considered sufficient and a circuit of action of 50 miles. In this case a well-known North Country firm called the Vulcan Foundry undertook to carry out the work of producing the pilot models.

#### TANK GUNS

It may be wondered why we kept to such a comparatively small gun as a 2-pdr. for both these tanks. It must, of course, be remembered that we were still groping our way forward in tank design. If we went for a larger gun it meant a larger turret and weights went up accordingly, which would introduce still more difficulties. A gun of about the size of the 2-pdr. had become the accepted anti-tank gun in most armies. Armour 14 mm. thick was used on nearly all tanks at that time and a 2-pdr. gun could deal with that quite easily. Anyway no nation at that time was prepared to handicap tank production by equipping the tanks with a heavier gun as the main armament. Some of the tanks of other armies had a short low-velocity gun of about 75 mm. calibre, but this was for close support work and we had a short range mortar in some tanks for the same purpose. The main armament in the German tank was a 37 mm. gun which was slightly less powerful than our 2-pdr. gun. Of course it was realized that a race would start between armour and gun, and in 1938 we prepared a 6-pdr. high-velocity gun on which we would go into production when the race for larger guns and heavier armour started. This 6-pdr. model was to serve for the future anti-tank gun as well as for the gun armament in the tank.

In connection with the design of the infantry tank, we knew that the armour would withstand the attack of the enemy's anti-tank guns or field artillery, but we were concerned as to the effect which the detonation of the shells might have on a member of the crew whose head might be only a few inches away on the inside of the armour. We had to carry out some trials with animals. The doctors were approached and they said that the human brain was less sensitive than that of a rabbit but more sensitive than that of a hen. They thought that these two animals would give us a bracket. Trials were, therefore, carried out against armour plate of the size and type which we proposed to use in the infantry tank, and in each case a hen and a rabbit were placed in a small box just behind the armour. When the firing took place and the shells burst on the armour we went up to examine the animals. The rabbit was in a great state of excitement, but the hen was bored stiff with the whole performance. We felt that the human brain being somewhere between these two would be all right, and when war broke out this proved to be true in practical experience on the battlefield.

#### THE MECHANIZATION OF TRANSPORT

Mechanization covers a much wider subject than tank design, and during this time much progress was being made in mechanizing the whole Army. Provided the right types of vehicle could be produced, it was clear that the Army would be far



more efficient if the horse was eliminated entirely; and this was the whole aim and object of the mechanization policy during 1937-39. The main difficulty at that time was the provision of suitable mechanical vehicles for the regimental transport. This has to move up to the troops over fields and lanes, and for a long time it was thought that some form of tractor would be needed for this purpose. This would have been a great handicap, because no commercial tractor was suitable for this work. No army has ever been able to afford to keep in peace time all the great quantity of transport that is needed in war. With horse transport the additional horses were obtained on mobilization from civilian use. If special tractors were now needed which could not be obtained from civil life, the whole of the tractors would have to be bought by the Army and kept in peace time. Fortunately the development of the large low-pressure tyre provided the solution, and the platoon truck was evolved which used ordinary commercial components.

The development of the motor transport for the Army and the schemes whereby civilian users were subsidized so that much the same transport was used for military or commercial work was a very fine undertaking. By 1939 the whole of the British Expeditionary Force was on a motor transport basis, and in that direction we were well ahead of foreign armies. By carrying the Infantry in lorries or buses, our divisions could easily move 100 miles a day; and they did so many times in the opening stages of the War. The Artillery also turned almost entirely to wheeled mechanical transport for towing the gun and, in fact, the only vehicles to use tracks were the tanks and the machine gun carriers.

#### TANKS IN 1939

By 1939 the position as regards tanks was as follows. The pilot models of the infantry tank had done well, and this tank became known as the Matilda. There were no longer any financial restrictions, but the priority for Army requirements was low. Only a limited number of firms could manufacture this tank with its very heavy turret and armour plate. The flow of these tanks from the small number of factories was slow. The tank itself was the most heavily armoured tank in the world at that time and gave a very good account of itself in the early stages of the War. It proved to be just what we required for the type of fighting at that stage.

As regards the cruiser tank, we were less successful. This tank represented a great step forward in performance, and high speed in a tank always brings difficulties. The early models were called by various names, but this design was eventually called the Crusader. When the troops first received these tanks they were delighted. It had a high speed of 20-30 miles an hour and a good circuit of action. The suspension was quite wonderful and the tank provided a good gunnery platform. The armour was thin, but thicker armour up to 25 mm. was being introduced on later models. Unfortunately the tank did not prove to be reliable. The faults were not of a serious nature and included such matters as a defective fan drive, faulty circulating pump for the water on the engine, and matters of this nature. The question of rectifying these defects will be referred to later.

The light tank proved to be reliable and satisfactory, but the aim was to produce the cruiser tanks as soon as possible for the armoured divisions. This was more urgent than the provision of the infantry tanks for use by the Army Tank Brigades in co-operation with the Infantry in heavy fighting.

## OTHER FORMS OF MECHANIZATION

Armoured cars had become unpopular because of the limitation of weight and cross-country performance on the small and hard pneumatic tyres; but the use of large low-pressure tyres introduced great possibilities, and much improved models of armoured cars were being introduced.

The machine-gun carrier turned out to be the best armoured fighting vehicle that the British Army ever produced. Great numbers were built and employed in all theatres of war. The chassis was used for many purposes, such as a light artillery tractor and for carrying a section of men behind light armour, but most of these subsidiary duties died out.

So little time was available and the pressure of work was so great that nearly all our efforts had to be concentrated on solving the main problems such as the provision of our two main types of tank. We had to rush into production before the tanks had been properly tested and before any time had been available for user trials in the hands of the troops. The work which we had to compress into two years had been thoroughly and systematically carried out by the Germans over a period of seven years. It was, however, found possible to carry out some trials in other directions. The work that had been done in connection with the R.E. tank at the end of the 1914-18 war was not forgotten. Useful progress was made with various types of mine-sweeping rollers and ploughs, some of which were used during the late war, and with bridging devices mounted on tanks. This work helped to pave the way for the formation of the special R.E. units equipped with A.V.R.E. tanks which were used in the final operations in France and Germany.

As regards research work, it was clear that tanks would become larger, heavier and more powerful as the War progressed. Now the main difficulty in this direction was in the transmission between the engine and the tracks and the method by which the power could be transmitted to one track or the other for steering purposes. For sharp turns one track has to be slowed down or held; if this is done by a braking process great energy is wasted, and the right way is to transmit all that energy into the other track. A very special design of transmission box was needed to supply all these requirements in addition to acting as a gear box. Special research was carried out in 1937-38 to evolve the ideal transmission for this purpose, and we told the engineers who were concerned with this activity to work on a basis of a tank weighing 40 tons and an engine developing 500 h.p. This was a long shot. No tank of this nature had ever been built, but it proved to be just about the type of tank which we reached before the end of the 1939-45 war. In 1939 the work was completed and a few experimental models of this form of transmission—known as the Merrit gear and steer box—were produced. It was a long way ahead in design of that produced by any other nation at that time and was used in nearly all our tanks from 1943 onwards. It was fortunate that we looked a long way ahead in spite of our immediate difficulties and carried out this research work in 1937-38.

We were also very anxious to construct a super-heavy tank of great length and weight and which displaced sufficient water to float. Such a tank we thought might swim straight across the Channel, and its length would enable it to cross almost any obstacle. A good deal of thought was expended on these ideas, but the pressure was so great on the limited industrial capacity of this country that permission was never obtained to carry out any practical trial in this direction.

Another activity that was pursued was in the development of special tanks known as C.D.L. tanks which had a powerful searchlight in each tank. The light was

emitted in such a way that the apparatus of the searchlight was entirely protected by the armour of the tank. The cone of light projected forward from the tank produced a dazzling effect on the enemy, and this effect was increased by using a shutter which made the light flicker. The general plan was that the tanks would advance in line, and the cones of light met at a point about two hundred yards ahead of the line of tanks. A series of dark triangles was thus produced, the base of the triangles being the line between the tanks and the apex being the point out ahead where the cones of light met. From the enemy side it was quite impossible to see through the beam of light and nothing could, therefore, be seen in or behind these triangles. The general idea was to use these tanks for a surprise attack on a defensive position and particularly in a case where the enemy had not had time to prepare any extensive minefield. The tanks were to advance by night in line covered by the usual artillery fire. The moral effect when the tanks suddenly switched on the glare of the searchlights was very great. The additional tanks and troops needed for the attack were to advance in the dark triangles where no aimed fire could be brought against them.

Earlier in the War such tanks would have been of great value in the desert for attacking the enemy in their laagers by night, and it is difficult to see what form of defence they could have employed, but the C.D.L. tanks were not ready till later on in the War. A brigade of these tanks crossed over to Normandy in 1944 and were available, but for some reason or other they were never used. They might well have been used at Caen and would have saved heavy casualties.

Under the existing difficulties, I do not think that the War Office can be said to have failed in any way during those three years before the outbreak of the 1939-45 war. Production of tanks was slow, but there were great demands on the limited industrial capacity of our country. Matilda was the best infantry tank in the world when the War broke out, though we only had small numbers available. The Crusader had a very fine performance as a cruiser tank, but was unreliable.

#### THE MINISTRY OF SUPPLY

A few months before the War the Ministry of Supply was formed. Later on in the War this Ministry did splendid work, but the formation of a new body of this nature just before the War was a great mistake—at any rate, as far as tanks were concerned. What was required at that stage was an intensive drive to rectify all the detail faults on these tanks and particularly on the Crusader so that really reliable machines would come flowing out from the production line. Unfortunately the new Ministry took a long time to find its feet. Perhaps this was inevitable. Engineers were introduced who did not understand tank problems. Practically nothing was done to rectify the defects in the early models of these tanks. Unreliable cruiser tanks continued to flow out from production and arrive in the hands of the troops. Eventually these matters were put right and the Cromwell tank, which was designed almost exactly on the lines of the Crusader, proved to be a splendid machine. There was no reason why this tank should not have been produced quite early in the War, and it is reasonable to suggest that this could have been achieved if such disruption had not been caused by changing the whole organization just before the War.

<sup>1</sup> An article on "Tank and Anti-Tank" by Brigadier R. M. P. Carver, C.B.E., D.S.O., M.C., which appeared in the *JOURNAL* of February, 1946, described the Allied and enemy tanks used during the 1939-45 war.

<sup>2</sup> Scale models of most of the tanks mentioned in the three articles and of the principal armoured car types can be seen in the R.U.S. Museum—EDITOR.

## THE CORPS OF INVALIDS

By CAPTAIN C. G. T. DEAN, late Royal Artillery

THE origin and early history of the Corps of Invalids has already been described in this JOURNAL<sup>1</sup>, and it is now proposed to continue the account until the final disbandment of these units in 1803. It may be recalled that by 1718 there were twenty-eight Companies of Invalids, that is to say, of out-pensioners of the Royal Hospital, Chelsea, in garrison at various places in England. The declaration of war against Spain at the end of that year led not only to the number of Companies being greatly increased, but also to a further development, the creation of a Regiment of Invalids. On 13th March, 1719, George Treby, the Secretary-at-War, informed Earl Lincoln, the Paymaster-General:

"His Majesty having been pleased to form a regiment of Invalids of ye out-pensioners of Chelsea Hospital under the command of Colonel Edmund Fielding<sup>2</sup> to consist of ten companys; of two serjeants, two corporalls, the drummer and fifty effective private men in each, besides commission officers; as also ten Independent companys, each consisting of ye above-mentioned numbers; I am commanded to acquaint your Lordship it is His Majesty's pleasure that you do cause the sum of five thousand pounds to be issued upon acct. to the said regiment and Independent companys."

Four days later the Secretary-at-War wrote to the Governor of the Royal Hospital stating that the Regiment of Invalids was "to do duty at Portsmouth." He also gave orders that:

"from the out-pensioners of Chelsea Hospital you are forthwith to select such a number of the best and ablest men to do duty as will compleat the regiment; and as His Majesty desires they should be formed with all possible expedition I am to desire you will please to give the necessary orders for making the draughts accordingly."

Subsistence was allowed from 11th March, and ten days later the Governor of Portsmouth was informed that three companies were on their way. Some of the officers of this regiment seem to have been transferred from companies of Invalids already serving at that naval port. The Headquarter establishment, as authorized the following year, was practically the same as for an ordinary Regiment of Foot, being as follows:—

	s.	d.	
Colonel ... ..	14	0	} per diem, in addition to their pay as company commanders.
Lieutenant-Colonel ... ..	7	0	
Major ... ..	5	0	
Chaplain ... ..	6	8	
Adjutant ... ..	4	0	
Quartermaster ... ..	4	8	
Surgeon, for himself ... ..	4	0	
and for his Mate ... ..	2	6	

[P.R.O., War Office, Establishments 24/101]

<sup>1</sup> August, 1944, p. 282.

<sup>2</sup> Father of Henry Fielding, the novelist. Promoted to Lieut.-General in 1739; died 1741. His successors in the command of this Regiment were Colonel T. Wardour, died 1752; and Colonel J. Parsons, died 1764.



In May, 1719, the Secretary-at-War informed the Paymaster-General that "His Majesty has the subject of the clothing of the regiment of Invalids under consideration"; but eventually no change was made in the uniform, which continued to be precisely the same as that worn at the Royal Hospital, i.e., red with blue facings.

The following month two companies were detached from this regiment and sent to Plymouth, where they remained for the next thirty years. In August, Colonel Fielding was ordered to transfer a number of Invalids "to compleat the four regiments coming from Ireland." His unit was evidently greatly reduced in strength through drafting, as in the same month 206 out-pensioners were reported to be waiting at Chelsea for an officer to march them down to Portsmouth.

In September, 1720, a company picked from the regiment was transported to South Carolina, where it remained in garrison, probably at Charleston, until 1728, when it was converted into a normally recruited independent company of Foot. By that time the Invalids were reduced to seventeen, only two of whom were repatriated at a cost of £5 each for their passage money.

Besides the ten companies of Invalids formed at the same time as the regiment, fifteen others were raised on 3rd April, 1719. One of these companies was sent to Guernsey, where it remained until 1740 or later, and in 1722 another one was stationed in the Scilly Islands. In December, 1726, a draft of 73 Invalids from the regiment at Portsmouth were sent as reinforcements for various units at Gibraltar, where they arrived in time to participate in the siege. The following year a company of Invalids was ordered to Jersey, to be followed by a further contingent of 300 in 1730, when disorders occurred on the island, and eventually two companies were left in garrison there. The men were not really fit for such arduous duties. Nevertheless, to maintain the companies, the Chelsea Board were obliged to order, in January, 1727, that all out-pensioners who had served in the Foot and were judged fit by the surgeon of the Royal Hospital, were to serve on garrison duty, provided they were "capable of firing over a wall." In 1744 the Lieutenant-Governor of Jersey reported that the duties there were very severe; but the two companies remained there until 1749, when one was moved to Guernsey.

The declaration of war by Spain in August, 1739, was followed three months later by the raising of five companies of Invalids under Lieutenant-Colonel Cracherode, who had previously commanded a similar unit at Sheerness.

About June, 1740, these five companies joined Commodore Anson's squadron, but as some of the men were unfit for service and many others deserted, they were not regularly mustered. The 259 Invalids who actually sailed must have formed a poor substitute for the Marines Anson had been promised, and few of them survived the hardships of the voyage round the world. Light relief to a somewhat tragic story was afforded by Colonel Cracherode, who is said to have returned at the end of the four years, "in the identical buckskins which he wore on leaving England, they having been the object of his exclusive attachment during the whole voyage." Nor was that the end of these remarkable garments, for they are said to have been utilized subsequently for book bindings!

In 1740, the Regiment of Invalids was transferred from Gosport to billets at Wickham, Titchfield, Fareham and Fordingbridge to make room for sick seamen of the Royal Navy; and a small detachment was employed in guarding Spanish

prisoners of war at Porchester until April, 1741. About 1747-48, when the 41st Foot was disbanded, the Regiment of Invalids was allotted that number, but no changes were made in its recruiting or uniform.

In a *Representation of the Cloathing of His Majesty's Household, etc.*, about 1742, a private of the regiment is shown as equipped with a black leather waistbelt and cartridge pouch. There was no scabbard for the bayonet, which was stuck loosely into the waistbelt. A water-colour drawing by D. Morier, now at Windsor, indicates that by 1751 the white stockings were being worn pulled up over the knees, and that the front corners of the coat were looped back on to buttons. A sword at the left side was balanced by a large black pouch, which was suspended from a buff waistbelt and cross-belt passing over the left shoulder. Officers wore an aiguillette on the right shoulder, and as late as 1758 had no lace on their coats.

Colours were first issued to the Regiment of Invalids about 1747. In a Royal Warrant of 1st July, 1751, they are described as measuring six feet by six feet six inches, and as being carried on a pike nine feet ten inches long. The King's Colour consisted of the Great Union; while the Regimental Colour was blue, with the Union in the dexter canton. The centre badge, which was repeated on the drums and bells of arms, displayed "the Rose and Thistle on a red ground, within the garter, and Crown over it." Both Colours were also furnished towards the upper corner with the number, XLI, within a wreath of roses and thistles. In addition, "the King's cypher and crown" were shown in "the three corners of their second colour." This stand of Colours was replaced in 1773.

On the outbreak of the Seven Years War in 1756, the Corps of Invalids were widely distributed. Four companies were in garrison at Hull, with three others at Chester, one at Landguard Fort, two at Tilbury, six at Plymouth, one at Pendennis Castle, three in Jersey, two in Guernsey and one in the Scilly Islands, while the 41st Regiment was still at Portsmouth. In August, 1758, the men of this latter unit were said to be "fitter for Chelsea than garrison duty," and twelve months later they suffered several casualties at Southsea Castle in an explosion caused through carelessness in handling gunpowder.

Between April, 1758 and the following January, four new regiments of Invalids were raised, each under a Lieut.-Colonel Commandant. They were the 81st, formed at Bristol under Lord Lindores<sup>3</sup>; the 82nd, commanded by John Parker<sup>4</sup>; the 83rd, raised in Ireland by John Seabright; and the 84th, whose commander, Eyre Coote, later made a name for himself in India. The following year four companies, 454 strong, were detached from the 81st and 82nd Regiments to garrison Emden, while the 83rd and 84th Regiments ceased to be Invalid Corps. In 1762, however, three new regiments of Invalids were raised, and numbered as the 116th, 117th and 118th Foot. These units consisted of only seven, six and four Companies, respectively, under Majors-Commandant R. Ackland, L. Cliffe and J. Lind. Like the 41st Regiment all these Corps wore the usual Chelsea uniform.

Reductions in the Army at the end of the Seven Years War led, in 1764, to the five junior regiments of Invalids being renumbered as the 71st to 75th Foot. At that time, their stations were Bristol, Jersey, Plymouth, Guernsey and Hull, respectively, but in 1765 the 71st Regiment appears to have served in Jersey for a time.

<sup>3</sup> Major-General 1761; Colonel of the 41st Regt., 1764; died 1765 and buried at the Royal Hospital.

<sup>4</sup> Major-General 1761; Colonel 41st Regt., 1765.

During the next four years, these regiments were reduced to five, six, six, five and two companies, and in 1770 they were all disbanded. Twelve companies of Invalids were then formed, mainly from the personnel of the four junior regiments; two for Hull, two for Sheerness and four each for Jersey and Guernsey. Of the independent companies of Invalids only eight were kept in being.

The 41st Regiment was not affected, apart from losing one of its ten companies in 1770. Three years earlier, when inspected at Portsmouth, it was reported that:

"the officers were old, mostly wounded and infirm, and many have lost limbs. Many of the men are stout and not old. The regiment is conformable to the King's order, and the clothing is good and new."

As far as the officers were concerned, the case was not overstated. The Major was 82 years-of age, other officers were only slightly younger, and two of the subalterns stone blind. In 1774 the regiment was described as:

"a serviceable corps of men for garrison duty. Performed their manual exercises and firing well, load quick, and present with proper aim. Fired in three ranks, the front rank standing."

A clothing warrant of 1768 prescribed blue breeches, waistcoat and facings for both officers and men, and as before, the rank and file had no lace to their button holes. Corporals were distinguished by a silk epaulette on the right shoulder. At this date, and possibly earlier, the Regiment had a Grenadier company, which was issued with the tall cap peculiar to that arm, the front of which was adorned with the King's crest and with the rose and thistle. The wings on the shoulders were of white lace with a blue stripe. Officers of this company had two silver laced epaulettes, whereas those of the battalion companies had only one, worn on the right shoulder, of gold until 1768 and then of silver lace.

The American War of Independence led to twenty new companies of Invalids being formed in February, 1775. Some of these units seem to have been required for manning "the castles of North Britain," because three years later there were companies in garrison at Edinburgh, Stirling and Dumbarton Castles, and at Forts George, Augustus and William and Blackness Castle. In the Summer of 1779, surgeons were sent on tour to inspect the out-pensioners throughout England and Wales with a view to recruiting men for ten new companies, six of which were sent to Plymouth and the remainder to the Channel Islands. The same Autumn the War Office wrote to three "Invalid Captains," ordering them to return to their stations "and take the command of your Independent Company of Invalids in garrison there."

When drafts were needed for the Corps of Invalids, a suitable number of out-pensioners would be summoned to Chelsea by notices inserted in the *Gazette*, and would then be billeted as near the Royal Hospital as possible. When a draft marched out there was no imposing military display; indeed, orders issued in 1779 stated that "if Invalids cannot march, they are with due discretion to ride on horseback or to be placed in carts." A contemporary colour print, by Schulz after Rowlandson, shows that even regiments of the Line travelled in this manner. Every imaginable type of vehicle was pressed into service, and the soldiers relieved the tedium of the journey by waving their hats, shouting to the onlookers, and beating their drums, as fancy dictated.

In 1782 the 41st Regiment became involved in an unpleasant incident at Portsmouth, when the Athol Highlanders, who had only just returned from America,

mutinied on receiving orders to sail for the East Indies. The Invalids, who happened to be on duty at the Main Guard, had no ammunition. Consequently, after one of them had been shot dead they were forced to retire, leaving their officer in the hands of the mutineers.

The old soldiers then opposed the squall,  
Which every townsman feared,  
Till whistling shot struck Tommy Prawl,  
When quick they disappeared.  
Their leader bold was captive caught,  
For quarter forced to beg,  
In vain upon escape he'd thought,  
For he'd a wooden leg.

[H. Slight, *Metrical History of Portsmouth*]

Eventually the disgruntled Highlanders were persuaded to lay down their arms and were disbanded.

Five years later the 41st was converted into an ordinary regiment of the Line. In December, 1787, the officers were retired on full pay, the sergeants on a shilling a day, and other ranks on the usual out-pensions. The unit was then recruited afresh from out-pensioners judged fit for service and given a new uniform, and thereafter ceased to be administered by the Chelsea Commissioners. It is now the 1st Battalion, The Welch Regiment.

On the conclusion of peace in 1783, great reductions were made in the establishments of the Corps of Invalids. Discipline was relaxed, and in remote garrisons the "Captain and Governor" would give himself six months leave and hand over to his senior subaltern, or "Lieutenant and Lieutenant-Governor" as he was sometimes grandiloquently called. Among other irregularities, Captains of Invalids often bought up their men's old clothing. In December, 1783, the Invalids at Sheerness complained that "they have but one of two Nights in Bed in the week, occasioned by their Burning (an old phrase in the Army) Twenty-One Men a week." This now obscure expression was understood perfectly by the Chelsea Commissioners, who ordered that "a letter be written to Governor Malcolm absolutely forbidding the practice of Burning in future for Duty, and to mention the impropriety of its having been allowed."

In 1790 fourteen companies of Invalids were formed, six of which were for Chatham and six for Portsmouth, but all of them were disbanded before the end of the year. A similar number of companies were raised three years later, on the outbreak of the Great War with France. As early as 1786 the officers of the company of Invalids at Stirling Castle had been reported to be dressed in "plain scarlet," and since then the adoption of red breeches and facings seems to have been general throughout the Corps of Invalids. This dress was evidently unpopular, for in 1794 the Captains of Invalids asked to be allowed "white waistcoats and breeches, with a white lining to the coats, and a becoming lace with a button emblematical of their service." Two years later the officers were reported to be wearing this uniform, and a hat with a gold loop and button. The hatband, gorget, sword and sword-knot were of Infantry pattern, and the buttons of yellow metal engraved with the King's Crown and the letters "R.I.I."

Discipline was now strictly enforced. An Invalid convicted of mutinous behaviour by Court Martial at Alderney in 1797 was given 900 lashes, struck off the



pension list, and drummed out of the Island; the severest punishment ever awarded to an out-pensioner. Captains of Invalids were given a free hand in making promotions to corporal; but the Chelsea Commissioners would not allow them to appoint "any Man under the Degree of Serjeant to a Halberd in Garrison," a ruling that was not relaxed until 1797. Captains were authorized to make regulations for their own companies, "without interference from the commandant of the garrison," except "when in the field." How inefficient the Invalids were is shown by the report of the Captain commanding at Star Castle in the Scilly Islands, in 1795, that his company included:

"four men who have wooden legs, unfit, being unable to practise the exercise of Cannon, which is indispensably necessary . . . as the Islands are exposed to attack, the Enemy's Ships of War and Privateers being almost daily in view."

Twelve new companies of Invalids were formed in 1801, when the garrisons were composed as follows: Alderney, five companies; Guernsey, nine; Jersey, eleven; Scilly Islands, one; Pendennis Castle (Falmouth), one; Plymouth, eight; Portsmouth, six; Sheerness, five; Chatham, one; Tilbury Fort, one; The Tower, five; Landguard Fort, one; Hull, two; Chester, two; Berwick, three; North Britain, five; and the Shetlands, two. Twelve additional companies were raised in 1802, but disbanded later in the year after the Peace of Amiens. Of the remaining 100 units, 66 were disbanded in 1802 and the remainder the following year. The officers were retired on full pay, but held liable for service in Royal Garrison Battalions then formed from such Invalids as were found fit for service. The un-serviceable men were granted increased pensions.

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The Rev. P. Sumner kindly communicated the information regarding the uniform of the Invalids in 1796.

## THE ATOMIC BOMB TESTS

**T**WO tests, known as "Operation Crossroads," of the effect of atomic bombs on ships were carried out, under the supervision of Vice-Admiral William Blandy, U.S.N., in the Bikini atoll (Pacific); the first on 1st July and the second on 25th July, 1946.

### THE FIRST (AERIAL) TEST

In the first test the bomb was carried in a Superfortress and released from 30,000 ft., exploding at a height of 1,000-1,500 ft.

The target fleet of 73 warships of all classes was anchored in the Bikini lagoon and distributed over an area of about 50 square miles. The "bull's eye," in the centre, was the old battleship "Nevada."<sup>1</sup> A short distance to starboard were the light carrier "Independence" and the Japanese battleship "Nagato."<sup>2</sup> with the cruiser "Salt Lake City" some distance away. About 200 yards to port was the cruiser "Pensacola" with the Japanese cruiser "Sadawa" nearby and the old U.S. battleship "Arkansas"<sup>3</sup> further out. Ahead of the "Nagato" was the old battleship "New York."<sup>4</sup> On the outer perimeter were the German cruiser "Prinz Eugen," the old U.S. carrier "Saratoga" and the old battleship "Pennsylvania."<sup>5</sup> In addition, destroyers, transports, Liberty ships, oilers and barges were scattered about the lagoon. It will be noted that the "Prinz Eugen" was the only warship of really modern design used in the test.

Goats, pigs, sheep and rats were put on board the warships to ascertain the effects of blast and radiation. Guns, tanks and quantities of ammunition were also embarked.

Admiral Blandy stated that the bomb used for this test was not so powerful as that dropped on Nagasaki, but more powerful than those used at Hiroshima and in the initial New Mexico test. Observers in his flagship, about 10 miles out, saw a brilliant orange flash and the typical cloud which mushroomed out to some 35,000 ft. It was subsequently reported that the bomb fell 1,500 to 2,000 ft. to the westward of the "Nevada" and between that ship and the "Independence."

The Evaluation Board, in a report published on 21st July, remarked that the only major combatant ships within half a mile of the explosion point were the battleships "Nevada" and "Arkansas," and the heavy cruiser "Pensacola." Little damage appeared to have been done to their hulls or their main turrets but their superstructures were badly wrecked. The ships would unquestionably have been put out of action and, along with many others within three-quarters of a mile, would have required extensive repairs at a principal naval base.

A destroyer and two transports sank at once and another destroyer capsized and sank later. The Japanese cruiser "Sadawa" sank the following day. The light carrier "Independence" was badly wrecked and gutted by fire. The submarine "Skate" was so badly damaged that it would have been unsafe to submerge.

Other ships suffered damage varying according to their type and distance and numerous fires were started, one in a ship two miles distant. Generally speaking,

<sup>1</sup> The "Nevada" was built in 1916 but her deck protection was improved in 1929, when she was modernized and fitted with bulges. She displaced 29,000 tons.

<sup>2</sup> 32,720 tons; reconstructed 1936.

<sup>3</sup> 26,100 tons; modernized 1926.

<sup>4</sup> 27,000 tons; modernized 1927.

<sup>5</sup> 33,100 tons; modernized 1931.

though, there was relatively little damage at distances greater than three-quarters of a mile.

It was considered that casualties from flashburn effects produced by initial radiation from the explosion would have been high among the exposed personnel, but that persons sheltered within the hull of a ship or even on deck "in the shadow of radiation from the bomb" would not have been immediately incapacitated by burns alone, whatever might have been the subsequent radiological effects.

There was no large water wave formed. The radioactive residue dissipated in the manner expected. No damage occurred on Bikini Island, about three miles from the explosion.

General observations were :

- (1) The atomic bomb dropped at Bikini damaged more ships than have ever been damaged by a single explosion.
- (2) The test provided adequate data for re-designing naval vessels to minimize damage to superstructure and deck personnel from that type of bomb.
- (3) The test was amply justified and further large-scale research and development are essential.

#### THE SECOND (UNDERWATER) TEST

The second test at Bikini was carried out on 24th July. The object was to test the effect of the underwater explosion of an atom bomb on ships' hulls.

The bomb, reputed to be the equivalent to 20,000 tons T.N.T., was slung under a landing craft in a moderate depth of water. It was detonated by distant radio impulse.

The "bomb barge" was in the centre of an ellipse, the inner circle of which included the old battleships "Nevada," "Arkansas," "Pennsylvania" and "Nagato," the old and large carrier "Saratoga" and the much-battered light carrier "Independence" and the cruisers "Pensacola" and "Salt Lake City." The nearest ships to the bomb were the "Arkansas" and the "Saratoga"—one on each side of it and about 1,000 yards apart. Outside this ellipse, at varying distances, were eight submarines (six submerged), 2,000 to 3,000 yards from the bomb, destroyers, landing craft, etc., also the "Prinz Eugen;" some of the ships were as much as three miles away, the intention being to provide "grading exposure."

The first effect of the explosion was a gigantic mushroom-shaped waterspout which shot up to a height of 5,000 feet; clouds of mist and vapour rose to nearly 9,000 feet\*. The whole target area was hidden for about ten minutes by water-soaked radio active clouds. Waves 30 to 100 ft. high broke from the centre of the explosion, but subsided rapidly and were only 5 ft. high when they reached Bikini Island.

When the disturbance cleared, there was no trace of the "Arkansas" and of some smaller ships, but the other major vessels were still afloat, although the "Saratoga" was listing badly and sank about seven hours later.

It took 48 hours for the radioactive conditions in the lagoon to clear sufficiently for results to be assessed more definitely; then it was found that heavy damage had been sustained by the battleship "Nagato" (she sank on 28th July), the destroyer

\* Striking photographs of this upheaval appeared in *The Illustrated London News* of 17th August, 1946.

"Hughes" (subsequently beached), and the transport "Fallon"; damage had been done to the hulls of the "Pennsylvania," "New York," "Pensacola," "Salt Lake City" and smaller vessels. Many ships had been wrenched from their moorings. One of the submerged submarines was sunk.

Admiral Blandy, in a statement on 11th August, pointed out that the underwater bomb sank more than four times the tonnage destroyed by the air bomb. In the aerial test the tonnage sunk aggregated 22,260, including the Japanese cruiser "Sadawa," 2 destroyers, and 2 transports. In the underwater test it aggregated 95,220, including two battleships and a carrier. Damage to other vessels was also proportionately heavier in the underwater test.

#### JOINT CHIEFS OF STAFF REPORT

In their "Observations and Conclusions" of both Tests, the Joint Chiefs of Staff remarked:—

"It is impossible to evaluate an atomic burst in terms of conventional explosives. As to detonation and blast effects, where the largest bomb of the past was effective within a radius of a few hundred feet, the atomic bomb's effectiveness can be measured in thousands of feet. However, the radiological effects have no parallel in conventional weapons. It is necessary that a conventional bomb score a direct hit or a near miss of not more than a few feet to cause significant damage to a battleship. At Bikini the second bomb, bursting under water, sank a battleship immediately at a distance of well over 500 feet and damaged an aircraft carrier so that it sank in a few hours, while another battleship sank after five days.

The first bomb bursting in air did great harm to the superstructures of major ships within a half-mile radius, but only minor damage to their hulls. No ship within a mile of either burst could have escaped without some damage to itself and serious injury to a large number of its crew. Although lethal results might have been more or less equivalent, the radiological phenomena accompanying the two bursts were markedly different. In the case of the air-burst bomb, it seems certain that unprotected personnel within one mile would have suffered high casualties by intense neutron and gamma radiation as well as by blast and heat. Those surviving immediate effects would not have been menaced by radioactivity persisting after the burst.

In the case of the underwater explosion, the air-burst wave was far less intense and there was no heat wave of significance. Moreover, because of the absorption of neutrons and gamma rays by water, the lethal quality of the first flash of radiation was not of high order. But the second bomb threw large masses of highly radioactive water on to the decks and into the hulls of vessels. These contaminated ships became radioactive stoves and would have burned all living things aboard them with invisible and painless but deadly radiation.

It is too soon to attempt an analysis of all of the implications of the Bikini tests. But it is not too soon to point to the necessity for immediate and intensive research into several unique problems posed by the atomic bomb. The poisoning of large volumes of water presents such a problem. Study must be given to procedures for protecting not only ships' crews but also the populations of cities against such radiological effects as were demonstrated in Bikini lagoon."

(See also Navy Notes, page 626.)



## THE INTERNATIONAL SITUATION

The Paris Conference ended on 15th October, 1946, to enable the Foreign Ministers and their staffs to transfer their international activities to America and to continue them there under the auspices of the United Nations Organization (U.N.O.). The inaugural meeting of that supreme diplomatic assembly took place, it will be remembered, in the Central Hall, Westminster, in January of this year—1946.<sup>1</sup>

It is regrettable that, so far, very little can be recorded as having been accomplished since then towards settling the international problems and difficulties which continue to divide and distract the world.

## THE UNITED NATIONS ORGANIZATION

The task and difficulties of U.N.O. were dealt with in an important speech by the Prime Minister—Mr. Atlee, at the Lord Mayor's Banquet, on 9th November. In the course of this, he said:—

"We have accepted the Charter of the United Nations, the lofty preamble of which sets out the course which the world must follow if it is to escape disaster. It is our intention to use the United Nations Organization, and all the international agencies which are being created, efficiently and effectively in all fields. They must be used not merely for the prevention of war, vital though that is, but for the positive building-up of peaceful co-operation between nations to eliminate the causes of war and destroy the conditions in which the seeds of war grow.

"This new organization cannot be built in a moment. If we are prepared gradually to transfer certain functions of sovereignty hitherto held to be national to a larger sovereignty, then we must move with great care. Confidence in the Organization must first be developed. The Government have a great responsibility to the people of this country and to the peoples of the Commonwealth and Empire with whom in peace and war we work so closely. We cannot relinquish any of these responsibilities until we are satisfied that we have achieved a greater security to replace what now exists.

## OBSTRUCTION AND PROPAGANDA

"I know we have all felt disappointment at the way in which the Organization is being used. Instead of its proceedings being objective and businesslike, there is obstruction; there are propaganda attacks on flimsy pretexts; and a variety of episodes which have tended to bring the Organization into disrepute—instead of building up the confidence we so much desire.

"It is clear that if the United Nations Organization is to be used as a forum for debating ideological differences, it will fail. It can succeed only if it is used to secure to all nations the freedom to preserve their own ways of life, while contributing to the common good of the world . . . .

"For this reason my friend the Foreign Secretary has exercised the greatest restraint in not indulging in polemics in reply to attacks made upon this country in speeches made to the U.N. and in sections of the foreign press and in broadcasts. It is better to answer by deeds, not words. Our actions in India, in Burma, in the Colonial Empire and elsewhere refute the contentions that the British Commonwealth and Empire is animated by Imperialism . . . .

## THE SERVICES AND SECURITY

"But I emphasize that disarmament cannot be unilateral and that while general confidence and security are being established in the World we must maintain our defence forces and remain strong. The lesson of the inter-war period was that disarmament

<sup>1</sup> See JOURNAL of February, 1946, p. 120.

must march hand-in-hand with the establishment of a general system of security. But when such a system has been established we must make our contribution to the forces needed for its preservation.

"Meanwhile, the basic policy of His Majesty's Government is now—as it always has been—to work for the restoration of the World and the establishment of prosperity, peace, and tranquillity in closest cooperation with all countries, and particularly with the Soviet Union and the United States, who have it in their power to make so large a contribution to these great objectives.

"In Europe the key to prosperity, peace, and tranquillity will be the settlement of Germany, and I commend . . . careful study of the plan set out in the Commons debate. It has two objectives. One is to allow the German people to use their great industrial ability so that they can maintain themselves and contribute to the standard of life of Europe and the World. We cannot have a cesspool of cheap, under-fed and exploited labour in the middle of Europe, which may bring down our whole standard of life unless we act with great care.

"In doing this, we must preserve our security and that of our Allies. These industries must not again be allowed to become an arsenal to be used by a new Germany to attack their neighbours or to promote another war, and it is just this fine balance that has to be so carefully worked out and the right controls established. I have often felt there was not sufficient cohesion between our financial policy and security matters between the two wars. This time anything we do in the realm of the reconstruction of Germany must take into account all the factors—and particularly security.

"Surely if ever there was a problem which merits the wise co-operation of allied statesmen, without bickering or ideological considerations—excepting that we all agree that Germany must be democratic—this is one. We have given consideration to all the possibilities. We have put forward our plan. We are willing that it should go on the anvil of discussion. We hope that there may result a European system which will give peace and confidence for generations to come . . ."

For the moment there is little else that can profitably be put on record here about U.N.O. and its activities. It remains to be seen whether the change of atmosphere will produce a change of heart from the contentious bickering and back-biting which marred the Paris Conference.

## BRITISH IMPERIALISM

### AN AMERICAN VIEW-POINT

The *New York Herald Tribune* of 18th September, commenting on Mr. Wallace's criticism of "British Imperialism," remarked that the British are "striving to give complete independence to India—even though they had found it necessary to stuff independence down Indian throats. Is this imperialism? They are making plans for progress towards self-government—and eventual independence—in Burma. Is this imperialism? They are reducing power in Malaya and simplifying the Malayan Government—which seems certain to lead towards democracy. Is this imperialism? They are negotiating for the removal of their troops from Egypt. Is this imperialism?"

The paper asks: "How do British actions compare with those of the saintly Russians, of whom Mr. Wallace is so fond? Who demanded military bases in Turkey? Who tried to take over Northern Iran—and apparently is succeeding? Who controls theoretically independent Outer Mongolia? Who is dominant in Poland? In Hungary? In Bulgaria? In Rumania? It is not the British, is it, Mr. Wallace?"

## CORRESPONDENCE

(Correspondence is invited on subjects which have been dealt with in the JOURNAL, or which are of general interest to the Services. Correspondents are requested to put their views as concisely as possible, but publication of letters will be dependent on the space available in each number of the JOURNAL.—EDITOR.)

### THE LAST JAPANESE BATTLESHIPS

To the Editor of the R.U.S.I. Journal.

SIR,—In his interesting article on "The Navies of the War" in the August number of the R.U.S.I. JOURNAL, "Navarino" says:

"The latest American battleships are the largest, most powerfully-armed, and fastest capital ships ever built. Displacing 45,000 tons (52,000 full load), they carry nine 16 in. guns."

I have just read an official American report which gives the tonnage of the two latest Japanese battleships as 64,000 tons and their armament 18 in. guns.

IAN MACALISTER.

15th September, 1946.

NOTE.—Information which has become available since the Review Article on *Jane's Fighting Ships* referred to in the above letter, confirms that the latest Japanese battleships were larger and more powerfully-armed than as recorded in the Annual.—EDITOR.

### A LIFE OF THE 7th EARL OF CARDEGAN

To the Editor of the R.U.S.I. Journal.

SIR,—I am collecting material for a life of James Thomas Brudenell, 7th Earl of Cardigan (1797-1868). I should be grateful if any of your readers who have unpublished documents or other material about him, especially for the period before the Crimea, would communicate with me. Any papers which they would be kind enough to lend me would be copied and carefully returned.

CYRIL RAY.

C6, Albany, Piccadilly, W.1.

20th August, 1946.

## REVIEWS OF BOOKS

### NAVAL

**Nelson's "Victory."** By Captain A. Grant, C.B.E., D.S.C., R.N. (Gale and Polden). 2s. 6d.

This is a well-illustrated guide for visitors to H.M.S. "Victory," where it is sold for the benefit of the "Save the 'Victory' Fund" and the Royal Naval and Marine Orphan Home.

Written by a war-time Captain of the ship, it gives the essential details of her history, construction and equipment and as such will commend itself to the public.

The author has already expressed his intention to get the mistake in the quotation of Nelson's famous signal corrected in future editions. "This day" formed no part of it, and was only interpolated to suit the well-known song.

**Brassey's Naval Annual, 1946.** Edited by Rear-Admiral H. G. Thursfield. (William Clowes & Sons, Ltd.) 3os.

The fifty-seventh edition of *Brassey's Naval Annual* finds it still securely established as an institution. That has the advantages and defects of such a position. It is sure to be found on its shelf as a book of reference, where one would expect to find it, in such places as the libraries of Naval Establishments, but seldom where one would not expect to do so. The danger of a book of reference is that it is not sufficiently read for itself. It is searched and consulted only to obtain the answer to a particular question. Like the public and famous features of one's own home town, it is always there, and, because one can go and look at it any time, one seldom does.

This is less than *Brassey's Naval Annual* deserves. It is, of course, of particular value to the future naval historian and to the student of facts and figures, containing as it does Captain Altham's Naval Chronicle of the last phases of the War; Mr. Hurford's "Naval Losses in the War"; Mr. McMutrie's "Foreign Navies," and 121 pages from Mr. Warren accompanied by 88 pages of silhouettes and plans of warships entitled "Reference section." There are other factual articles as well. But there is another value in the *Annual* and that is its contribution to current naval thought. To endeavour to draw "Lessons from the War" within a year of its conclusion is bold and provocative; it stimulates; it asks for agreement or disagreement; it invites argument and discussion. Similarly the role of aircraft in war is a vital subject, probably one of the most vital problems of to-day, and one on which few Sea or Air Officers entirely agree. To it two chapters by different authors are devoted. Nor is the overall mercantile picture—the requirements of sea borne trade, overlooked, for no less an authority than Sir Archibald Hurd contributes an essay on "The Restoration of British Shipping."

These latter are living issues, issues of which not only the Service but also the lay mind should be aware and which it is the duty of all who exercise the right of voting at an election to consider and hence accept some measure of responsibility for the policy governing the defence of the country.

The heyday of naval thought was when Nelson and his contemporaries were young. Those days were not in some ways the most glorious in naval annals for they were marred by bitter political controversy; but although for a time Admirals such as Howe and Keppel would not serve their country due to political faction, the same controversy and competition had the advantage of bathing naval affairs in the full tide of publicity. Naval events were the talk of everyone. The professional sailor had to be able to answer both the lay critic and the more violent criticism of sea officers of the opposite political party. Perhaps as a reaction the Navy has since then tended to hide itself behind a cloak of silence.



But we are on the threshold of a new age, the Sure Shield must adapt itself to counter the new sword, and it is necessary that the importance of our trade and its protection be rediscovered to the people of this Island, and the Empire. Nelson's career crowned the growing co-operation of individual ships into a fleet; the war just past has revealed the need for a wider conception. "Ships and aircraft by collaboration achieve mastery," writes the Editor, and sea power must remain the vital link in the communications of this Island until air transport takes the place of sea transport in carrying the trade of the world.

It is for these reasons that to regard *Brassey* as simply a book of reference is a mistake. It should be read.

The Editor has performed his important task with accustomed ability. Not to be hypercritical, but rather to make constructive suggestions for the future, the reference section would be more complete if it incorporated some statistics and other information concerning the personnel and administration of the various navies. The impact of science on the Services—the outstanding revolution of the War, might also find a place in the next volume.

The production, including the excellent illustrations, are what we have come to take for granted, but none the less appreciate in *Brassey*.

**Attack Transport**—The Story of the U.S.S. "DOYEN." By Lieutenant Lawrence A. Marsden, Supply Corps, U.S.N. (Oxford University Press). 15s. 6d.

The author, in a brief note, confesses that his reason for writing this book was "partly for something to do and partly as a memento for the men who served on the 'Doyen,'" and it is essentially for the idle rather than the studious hour.

The story of an armed transport (AKA to those familiar with the brevities of our Ally) starts with commissioning day and then voyages through waters, far from pacific, from Kiska operation in the Aleutians to the fall of Iwo Jima.

Writing in the first person in order to maintain a smoother continuity, Lieutenant Marsden has the easy, readable style of so many American writers, yet his story rather misfires. To avoid a baldness of description of events at which he himself has not been present, a chronicler requires a surer touch than this author appears to possess. Joining the "Doyen" only half-way through her adventures, his accounts of the earlier scenes lack that touch, which handicap is also evident thereafter, if to a lesser degree, and certainly so far as the records of operations go. The dreariness of the Aleutians is unconvincingly drawn; the bloody fight for Tarawa is too anaemic; only at Iwo Jima does he manage to convey to the mind some idea of the din and strife of battle, and then vicariously by quoting verbatim the letter of one of the "Doyen's" doctors to his parents—who surely must have recoiled, shaken, at such a ghastly medical case-book of horrors.

True, the author makes no pretentious claims. Active operations occupy the smaller portion of the narrative which in the main concerns itself with those more personal moments that stand out from the monotony which forms so large a part of warfare. And it is here, in the life of bunk-space and wardroom, that interest is occasionally stirred: by glimpses of the American way of life, which reveals how much better they are than most at enjoying, unembarrassed by feelings of patronage or inferiority, man's basic equality without prejudice to discipline; by wonder at the extreme lengths to which horse-play can be carried without intervention from above, if we are to believe the frankly vicious treatment meted out to "Pollywogs" by "Shellbacks" prior to a crossing-the-line ceremony; and by the rather ingenuously recorded instances of the panic effects that fear produces.

A group of a score or more photographs illustrates some of the incidents. Clear and well-taken as they may be, they will not be found particularly outstanding by the Service reader.

Admiral Richmond K. Turner's foreword pays a well-deserved tribute to the crews who manned those transports.

## MILITARY

**"The Seine! The Seine!" A Military Bridging Narrative.** By Lieut.-Colonel Tom Lloyd, D.S.O., M.C., R.E. (Sifton, Praed and Co., Ltd.). 28.

Only 42 pages long, this booklet is excellent reading. It describes clearly, simply and vividly the operation of bridging the Seine at Vernon at the end of August 1944 by the 7th Army Troops Engineers. Here is a quotation from the final page:

"30 Corps, pouring across the Seine at Vernon during the last few days of August, swept swiftly on . . . There was satisfaction in watching that pouring process . . . The surroundings were picturesque too. The passing troops, their thoughts on the battles ahead, could hardly appreciate the circumstances. They crossed pre-occupied, impassive or nonchalant. Not all, though.

"Once, when the Guards were crossing, I happened to be at the roadside on the near bank when the column checked. It was a small armoured car that drew up alongside me, giving its occupants their first view of the river. They had come a long way, had the Guards.

"The officer in the car stood up to view the scene . . . He gazed admiringly up and down the river and across. It was an interval between showers. The rain-washed air was clear. The sun was sparkling on the water. The green and white valley was at its best. Presently he glanced down, and perhaps he detected some understanding in me, for my mind was shaking free of bridging, and it pleased me somehow when he turned again to the valley and extended an arm towards it in a sweeping gesture that paid tribute to its beauty. 'Ah,' he exclaimed, and in the noise of the engines I saw his lips form the words, rather than heard them: 'The Seine! The Seine!'"

**Over to France.** By Pierre Mailland. Translated by Francis Cowper. (Oxford University Press). 7s. 6d.

The author was one of the three Frenchmen who made the B.B.C. broadcasts to France during the years of the German occupation. In 1944 he landed in Normandy shortly after D-day. Attached to General Leclerc's division, Mailland describes in vivid fashion his personal experiences during the campaign of liberation—experiences which included capture by the Germans and escape. Readers will be specially interested in the writer's first impressions on return to France after four years exile.

The book is well translated from the French and is very readable.

**The Army: April, 1942, to June, 1943.**

**The Army, British and Allied: July, 1943, to September, 1944.** By Major E. W. Sheppard, O.B.E., M.C. (Hutchinson & Co., Ltd.) 21s. each.

These are two volumes in Hutchinson's "Britain at War" series. They are well produced, with numerous and excellent photographic illustrations. The text describes the military operations readably, and as a contemporary record these books should be very popular.

## ADDITIONS TO THE LIBRARY

### GENERAL

- AMBASSADOR ON SPECIAL MISSION. By Sir Samuel Hoare. (Viscount Templewood.) 8vo. (Collins 1946.) 16s.
- THE CARTHAGINIAN PEACE—OR THE ECONOMIC CONSEQUENCES OF MR. KEYNES. By Etienne Mantoux. 8vo. (Oxford University Press 1946.) 12s. 6d. An answer to "The Economic Consequences of the Peace" by J. M. Keynes (1920) by a soldier of France who was killed in the last days of the late war.
- SOME ANCIENT CITIES OF INDIA. By Stuart Piggott. 8vo. (Oxford University Press 1946.) 5s. Presented by the Publishers.
- THE ANNUAL REGISTER FOR 1945. Edited by M. Epstein. 8vo. (Longmans 1946.) 42s. 187th Issue.
- OVER TO FRANCE. By Pierre Mailland. 8vo. (Oxford University Press 1946.) 7s. 6d. Presented by the Publishers.
- AN ACCOUNT OF THE EARL OF PETERBOROW'S CONDUCT IN SPAIN. By John Freind. 8vo. (Jonah Bowyer 1707.) Presented by Lieutenant R. J. E. Craven, R.N.
- "THE TIMES" BROADSHEETS FOR SOLDIERS AND SAILORS. (Complete set published during the Great War 1914-18.) Presented by Warren R. Dawson, Esq.
- THUNDERBOLTS. By Major-General J. F. C. Fuller. 8vo. (Skeffington 1946.) 12s. 6d.
- WILLIAM THE SILENT. By C. V. Wedgwood. 8vo. (Cape 1946.) 18s.
- REBELLION IN PALESTINE. By John Marlowe. 8vo. (Cresset Press 1946.) 12s. 6d.
- JUST AS THEY CAME. By Adam West. 8vo. (Longmans 1946.) 6s. A series of letters written by a young modern soldier from various parts of the British Isles during his period of service. Presented by the Publishers.
- 1848: THE REVOLUTION OF THE INTELLECTUALS. By L. B. Namier. 8vo. (Cumberlege 1946.) 10s. 6d.
- REPORT BY THE SUPREME ALLIED COMMANDER, MEDITERRANEAN, TO THE COMBINED CHIEFS OF STAFF ON THE OPERATIONS IN SOUTHERN FRANCE. August 1944. (H.M. Stationery Office 1946.) 1s.
- REPORT BY THE SUPREME ALLIED COMMANDER, MEDITERRANEAN, TO THE COMBINED CHIEFS OF STAFF ON THE ITALIAN CAMPAIGN. 8th January 1944-10th May 1944. (H.M. Stationery Office 1946.) 1s.
- REPORT OF THE ANGLO-AMERICAN COMMITTEE OF ENQUIRY REGARDING THE PROBLEM OF EUROPEAN JEWRY AND PALESTINE. Issued from Lausanne, 20th April 1946. (H.M. Stationery Office 1946.) 1s. 3d.
- THREE YEARS WITH EISENHOWER. By Captain Harry C. Butcher, U.S.N.R. 8vo. (Heinemann 1946.) 21s.
- ARABIA PHOENIX. By Gerald de Gaury. 8vo. (Harrap 1946.) 10s. 6d.
- THE WEIMAR REPUBLIC. By Godfrey Steele. 8vo. (Faber and Faber 1946.) 18s. Presented by the Publishers.
- THE ROARING CENTURY 1846-1946. By R. J. Cruikshank. 8vo. (Hamish Hamilton 1946.) 12s. 6d.
- WAR ON THE LINE. By Bernard Darwin. 8vo. (Southern Railway 1946.) 7s. 6d. The Organisation of the Southern Railway in War Time.
- WELLINGTON. By Richard Aldington. 8vo. (Heinemann 1946.) 18s.
- THE REPUBLIC OF AUSTRIA. By Mary Macdonald. 8vo. (Oxford University Press 1946.) 8s. 6d.

- IRAN. By William S. Haas. 8vo. (Oxford University Press 1946.) 33s. 6d.
- UNITED NATIONS DOCUMENTS. 8vo. (Chatham House 1946.) 10s. 6d. Atlantic Charter, Berlin Conference, Bretton Woods, etc., etc.
- RAILROAD OF DEATH. By John Coast. 8vo. (Commodore Press 1946.) 12s. 6d. The full account by a prisoner of the Japanese.
- WHY DON'T WE LEARN FROM HISTORY. By B. H. Liddell Hart. 8vo. (Allen and Unwin 1944).
- CHARTER OF THE ROYAL HOSPITAL OF CHARLES II NEAR DUBLIN. (Faulkner, Dublin, 1760.) Presented by Major J. R. C. Crosslé, Royal Inniskilling Fusiliers.
- ARMAMENT AND HISTORY. By Major-General J. F. C. Fuller. 8vo. (Eyre and Spottiswoode 1946.) 12s. 6d. Presented by the Publishers.
- THE INTERNATIONAL ECONOMIC PROBLEM. By Sir Hubert D. Henderson. (Pamphlet by Oxford University Press 1946.) 1s.
- PACIFIC VICTORY. By Hugh Buggy. 8vo. (Australia House.) 2s. 6d. A short history of Australia's part in the war against Japan.
- SECRET SESSION SPEECHES. By Winston Churchill. 8vo. (Cassell 1946.) 6s.
- AMERICA'S STAKE IN BRITAIN'S FUTURE. By George Soule. 8vo. (Oxford University Press 1946.) 10s. 6d.
- ALASKA HIGHWAY. By Philip H. Godsell. 8vo. (Sampson Low 1946.) 12s. 6d. An autobiography; but important insofar as it refers to one of the most important strategic roads in the world.
- PALESTINE. By M. F. Abcarius. With an Introduction by Major-General Sir E. L. Spears. 8vo. (Hutchinson 1946.) 12s. 6d.
- WHEN MEN AND MOUNTAINS MEET. By H. W. Tilman. 8vo. (Cambridge University Press 1946.) 15s. Presented by the Publishers.
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## NAVAL

- LISTS OF OFFICERS OF THE BOMBAY MARINE AND INDIAN NAVY 1767-1837. (Type-script compiled from the India Office List "Marine Records Misc. 680" by Commander R. D. Merriman, R.I.N.) Presented by the Compiler.



- DAYS OF A DOGSBODY. By Commander C. A. Jenkins, R.N. 8vo. (Harrap 1946.) 10s. 6d.
- ATTACK TRANSPORT—THE STORY OF U.S.S. DOYEN. By Lieutenant A. Marsden, U.S.N. 8vo. (University of Minnesota Press 1946.) \$2.50. Presented by Oxford University Press. (English Edition 15s. 6d.)
- STATESMEN AND SEA POWER. By Admiral Sir Herbert Richmond. 8vo. (Oxford University Press 1946.) 15s. Presented by the Publishers.
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### MILITARY

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- NORTH IRISH HORSE BATTLE REPORT. NORTH AFRICA-ITALY 1943-45. (W. and G. Baird, Ltd., Belfast 1946.) Presented by the North Irish Horse Old Comrades' Association.
- BRITAIN'S OTHER ARMY. By Eileen Bigland. 8vo. (Nicholson and Watson 1946.) 8s. 6d. The Story of the A.T.S.
- THE ARMY, April 1942-June 1943; and THE ARMY (BRITISH AND ALLIED), July 1943-September 1944. By Major E. W. Sheppard. 8vo. (Hutchinson 1944 and 1946.) 21s. each. Presented by the Author. Over 500 illustrations in each volume.
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\* Messrs. Gale and Polden have agreed to pay royalties on the sale of this book to the Old Comrades' Association, The Dorsetshire Regiment.

- THE TIGER TRIUMPHS. (Pamphlet by H.M. Stationery Office 1946.) 2s. 6d. A Continuation of "The Tiger Strikes" and "The Tiger Kills."
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- GREAT SOLDIERS OF THE SECOND WORLD WAR. By Major H. A. de Weerd. 8vo. (Hale 1946.) 15s.

## AIR

- THE FIGHT FOR AIR POWER. By William Bradford Huie. 8vo. (Fischer, New York 1942.) \$2.50.
- THE R.C.A.F. OVERSEAS: THE FIFTH YEAR. 8vo. (Oxford University Press, Toronto 1946.) \$3.00. Presented by the Publishers. (English Edition 16s.)
- TASK FOR COASTAL COMMAND. By Hector Bolitho. 8vo. (Hutchinson 1946.) 12s. 6d.

## GENERAL SERVICE NOTES

### MINISTRY OF DEFENCE

On 31st October, 1946, the House of Commons approved, without a division, the proposal in Command Paper No. 6923 for the Central Organization for Defence.

In this White Paper it was stated that experience has shown the need of a Minister who has both the time and the authority to formulate and apply a unified defence policy for the three Services; and it was proposed that this need should be met by the creation of a Minister of Defence.

The form of the new organization proposed may be summarized as follows :—

- (a) The Prime Minister will retain the supreme responsibility for defence.
- (b) The Defence Committee, under the Chairmanship of the Prime Minister, will take over the functions of the old Committee of Imperial Defence, and will be responsible to the Cabinet both for the review of current strategy and for co-ordinating departmental action in preparation for war.
- (c) A new post of Minister of Defence, with a Ministry, will be created. The Minister of Defence will be responsible to Parliament for certain subjects affecting the three Services and their supply. In addition, he will be Deputy Chairman of the Defence Committee; and he will also preside over meetings with the Chiefs of Staff whenever he or they may so desire.
- (d) The Chiefs of Staff Committee will remain responsible for preparing strategic appreciations and military plans, and for submitting them to the Defence Committee; and the Joint Staff system will be retained and developed under their direction.
- (e) The Service Ministers will continue to be responsible to Parliament for the administration of their Services in accordance with the general policy approved by the Cabinet and within the resources allotted to them.

*The Defence Committee.*—The appointment of a Minister of Defence will relieve the Prime Minister of that part of his general responsibility for national defence which is concerned with the inter-relation of the three fighting Services and their supply. There remains, however, the organization for national defence in its broader aspect, including both current questions of high policy in the sphere of defence and also the preparation of plans over the whole field of Government activity, both civil and military, for mobilizing the entire resources of the nation in a major war.

There will be a Defence Committee to deal with these problems, under the Cabinet. It will be responsible both for the review of current strategy and also for the preparation of plans for the country's transition from peace to war, and will thus discharge the tasks carried out before the War by the Committee of Imperial Defence.

The Prime Minister will be Chairman of the Defence Committee. Its composition will be flexible. The Prime Minister, the Minister of Defence, the Lord President of the Council, the Foreign Secretary, the Chancellor of the Exchequer, the Service Ministers, the Minister of Labour and the Minister of Supply will be regular members of the Committee, and the Chiefs of Staff will be in attendance. Such other Ministers, officers and officials as may be required will be invited to attend meetings of the Committee, according to the subjects under discussion.

The preparation of plans for mobilizing the nation's resources in war will be undertaken by a system of Sub-Committees working under the general direction and authority of the Defence Committee. These Sub-Committees will include representatives of the Services, Service Departments, and Civil Departments, and, where necessary, persons outside government service altogether.

The Prime Minister must be Chairman of the Defence Committee, by virtue of his ultimate responsibility for national defence. He will have as Deputy Chairman a senior Minister who can relieve him of as much as possible of the detailed work of supervising

the preparation of our defence plans. The Minister of Defence will undertake this task. In this capacity he will be able to exercise a general supervision over the preparations which are being made for national defence as a whole through the various Sub-Committees of the Defence Committee.

*Functions of the Minister of Defence.*—Apart from his duties as Deputy Chairman of the Defence Committee, the Minister of Defence will, as such, be responsible for the following functions :—

- (a) The apportionment, in broad outline, of available resources between the three Services in accordance with the strategic policy laid down by the Defence Committee. This will include the framing of general policy to govern research and development, and the correlation of production programmes.
- (b) The settlement of questions of general administration on which a common policy for the three Services is desirable.
- (c) The administration of inter-Service organizations, such as Combined Operations Headquarters and the Joint Intelligence Bureau.

The Minister will bring his proposals under (a) before the Defence Committee and the Cabinet. He will present the Cabinet's decisions on these to Parliament, and will decide questions arising between the three Services in their application. He will not be responsible for the subsequent detailed execution of the approved programmes, which will be the task of the Service and Supply Ministers. As a consequence of (b), he will answer questions in Parliament on matters common to the three Services or to the three Services and the Ministry of Supply. The machinery through which the Minister will discharge his responsibilities is described below.

*The Apportionment of Resources.*—The new organization must be such as to ensure that the resources available for defence are laid out to the best advantage in terms of manpower, weapons and equipment, works services, amenities, etc. The Chiefs of Staff will advise the Defence Committee on our strategic requirements from year to year. It will then be for the Service Departments to translate these requirements into terms of men, money and supplies, and for the Minister of Defence to co-ordinate the results, with the help of the Chiefs of Staff and the Committee of Service Ministers described below, and to present to the Defence Committee a coherent scheme of expenditure which will give the country forces and equipment in properly balanced proportions. On production questions there will be a standing Ministerial Production Committee consisting of the Service Ministers, the Minister of Supply and the Minister of Labour, over which the Minister of Defence will preside. Working for this Committee there will be a Joint War Production Staff, composed of serving officers and representatives of the Service and civil Departments concerned, under a permanent Chairman who will be appointed to the staff of the Minister of Defence.

With the help of this organization, the Minister of Defence will be able to frame comprehensive defence proposals in the form of a consolidated estimate for presentation to the Defence Committee and the Cabinet.

It will be the duty of the new Minister's Production Committee, assisted by the Joint War Production Staff, to study all and especially the wider aspects of our war potential, and for this purpose these bodies will be regarded as sub-committees of the Defence Committee.

*Administrative Questions of Common Interest to the Three Services.*—Within the resources allotted to them, the Service Ministers will continue to be responsible to Parliament for the maintenance and administration of their own Services. The appointment of the Minister of Defence will afford an opportunity to build up, for the handling of administrative questions which are of common interest to the three Services, machinery independent of the Chiefs of Staff organization which will give full scope for collaboration by the Service Ministers and the administrative branches of their departments. The Minister of Defence will establish a Standing Committee of the three Service Ministers



meeting under his Chairmanship. This will be served by inter-Service Consultative Committees of Principal Personnel Officers and Principal Supply Officers, which will also be linked up in operational matters to the Chiefs of Staff Committee. The Minister will thus discharge these functions in relation to the Services by making full use of the staffs of the Service Ministries on the proved Joint Staff system.

*Administration of Inter-Service Organizations.*—The Minister of Defence will assume control of inter-Service organizations such as Combined Operations Headquarters, the Joint Intelligence Bureau and the Imperial Defence College, and their staffs will be borne on his Vote. For the present the only inter-Service bodies to be so transferred are organizations concerned with planning, intelligence and staff training which have developed out of the Joint Staff system and are closely integrated with the work of those Staffs. A study is being made, however, of the possible advantages of drawing together certain administrative services which are now provided separately for each of the three fighting Services, e.g., the medical services, and forming a combined organization which would provide those services in common for all branches of the Armed Forces. If, as a result of this examination, such amalgamation were found to be desirable, these common services might at a later stage be placed under the Minister of Defence and administered directly by him. His Majesty's Government have not reached a decision on this matter; and, if they should subsequently decide in favour of amalgamation, further proposals for this purpose would be presented to Parliament.

*Relations of the Minister of Defence with the Chiefs of Staff.*—The Chiefs of Staff organization has been highly developed during the War and its value has been fully proved. No change is therefore contemplated in the organization of the Chiefs of Staff Committee, which will continue as at present, together with the Joint Staffs for strategic planning, intelligence, and administrative planning. The Chiefs of Staff Committee will retain their responsibility for preparing strategic military plans and submitting them to the Defence Committee. On all technical questions of strategy and plans it is essential that the Cabinet and Defence Committee should be able to have presented to them directly and personally the advice of the Chiefs of Staff, as the professional military advisers of the Government. Their advice to the Defence Committee or the Cabinet will not, therefore, be presented only through the Minister of Defence. At the same time, the organization on which they rely in their collective capacity will be within the new Ministry, and the Chiefs of Staff will meet under the Chairmanship of the new Minister whenever he or they may so desire. Thus, it will be after such consultation with them that he will formulate his proposals for the apportionment of resources between the three Services. Before any major strategical plan is submitted to the Defence Committee, he will usually discuss it with the Chiefs of Staff, though not with a view to acting as their mouthpiece in the Defence Committee.

*Organization for Formulation of Policy for Research and Development.*—For this purpose there will be a Committee on Defence Research Policy, consisting of those responsible, both from the operational and scientific angle, for research and development in the Service Departments and the Ministry of Supply. This will advise, on operational questions, the Chiefs of Staff and, on wider aspects, the Defence Committee. Its Chairman will be a scientist of high standing, appointed for the purpose for a period of years. He will exercise his functions under the authority of the Minister of Defence, with whom will rest responsibility for the framing of general policy to govern research and development.

*Home Security.*—In any future war the problems of home security will assume an importance even greater than that which they had in the late war. His Majesty's Government have considered the desirability of extending the functions of the Minister of Defence to cover this field. They have concluded, however, that it would be wrong to do this. Home security embraces a large number of activities which fall within the province of the civil Ministries, and to give the Minister of Defence charge of all this

would be to give him functions far outside his intended scope. It will be the duty of the Defence Committee to link home security problems to broad defence policy, and the Home Defence Committee has already been reconstituted for the purpose.

*Ministry of Defence.*—The functions assigned to the Minister of Defence are such that it will not be possible for him to operate only through a small Secretariat. He will from the outset assume control over certain existing inter-Service organizations and on this account alone will need a Department with a separate Vote. For the discharge of the functions described above, however, the Minister will not need a large staff. He will have as his principal advisers a Permanent Secretary, a Chief Staff Officer, the Chairman of the Joint War Production Staff and the Chairman of the Committee on Defence Research Policy. These will be assisted by a relatively small staff, partly civil and partly military, which among their other duties will provide the Secretariat for the Committees and Joint Staffs through which the Minister will mainly work. The civil members of this staff will be drawn from the Civil Service, in the normal way. The military members will be seconded from the three Services as are the military officers of the Cabinet Secretariat.

*Commonwealth Collaboration.*—Co-operation in Commonwealth Defence has always taken the practical form of promoting uniformity of organization, training, and equipment of military forces, maintaining the closest possible touch between Staffs, and inter-changing officers in order to promote a common doctrine and outlook in military affairs. Collaboration in war-time between the naval, land and air forces from different parts of the Commonwealth has thus been easy and effective.

Since 1923, the natural tendency of the different parts of the Commonwealth to view problems from their own individual standpoint has become more marked. During the recent war, no attempt was made to revive the Imperial War Cabinet of 1917-18, but this did not prevent the maintenance of a very close touch between the Governments of the Commonwealth, not only by telegraphic means but by constant meetings between Ministers, officers and officials on all levels. In this way, it was possible to make common plans for military action, for the co-ordination of munitions production, and for the co-operation of scientists and technicians in research and development. This flexible system of handling problems of mutual concern has proved very effective.

The natural starting-point for future progress in Commonwealth defence has been the idea of regional association. Geography largely decides which problems most directly concern the separate members of the Commonwealth, and it is the aim of the various Governments to recognize and take advantage of this fact by arranging that regional questions shall in the first place be studied in the appropriate regional centre. His Majesty's Government in the United Kingdom have proposed that there should be established in the capital of each of the Dominions United Kingdom liaison officers who could join with the Dominion Chiefs of Staff in studying regional security problems. Similarly they have proposed that Dominion Governments should appoint liaison officers in London. It has been suggested that by this means regional studies can be directed by the Government most immediately concerned with the help of a team of joint advisers. The fruits of these studies can be made available in London, and in the other Dominion capitals, and in this way that measure of co-ordination which is necessary can be secured. The exact method of organizing the interchange of liaison officers will depend upon the varying constitutional practice in the different parts of the Commonwealth.

These proposals received a favourable hearing at the discussions in London in the Spring, and His Majesty's Governments in the Dominions are studying them in detail. There is reason to suppose that in the main they will prove acceptable, and that they will pave the way for machinery which, while giving full play to the independence of the Member States of the Commonwealth, will be effective as a means of consultation and collaboration.

This regional method of organization will also fit well into any regional schemes evolved under the aegis of the United Nations in which other States will join with members of the Commonwealth in appropriate geographical areas.

*Colonial Defence.*—For the defence of the Colonial Empire His Majesty's Government in the United Kingdom is directly responsible. The two main objects to be achieved in this field are first the security of the Colonies themselves from external attack, and secondly the development of the full resources of the Colonies in the event of war. The security of the Colonies rests mainly upon the maintenance by the Imperial forces of command of the sea and air approaches and of the freedom of the lines of communication between the different parts of the Empire. Plans and preparations for Colonial defence thus fall (apart from any arrangements for Regional Defence which may be made with the Dominions) within the general scope of the defence measures for which the United Kingdom Government is primarily responsible. It is proposed to revive the Oversea Defence Committee as a sub-committee of the Defence Committee in London, and this body will be charged, as it was before the War, with surveying the whole field of defence preparations in the Colonies and their correlation with the general picture of Imperial Defence. It will also be the duty of this Committee to make sure that full account is taken in Imperial plans of the contribution in men, materials, and facilities which each Colony is capable of making to the general pool in time of war.

#### SCHOOL OF COMBINED OPERATIONS

A School of Combined Operations has been instituted at Fremington, North Devon, under the command of Major-General G. E. Wildman-Lushington, Royal Marines. The first course has been attended by twenty officers from the Army, ten from the Royal Navy and ten from the Royal Air Force. While the main subject of the course is the study of "beach assault," the general object of the school is to give each Service a broad idea of the functions and limitations of the others.

#### VOLUNTARY RECRUITMENT FOR THE SERVICES

Speaking in the House of Lords on 14th October, Lord Pakenham (Under-Secretary of State for War) said that nothing could be further from the truth than the widespread belief that, owing to conscription, voluntary recruiting was unnecessary. Voluntary recruitment alone could provide the essential framework of the Services.

The present position could only be described as serious. Recruitment for the Navy was reasonably satisfactory, but the figures for the Army and Royal Air Force were decidedly disappointing and much below the level that had been hoped for. The whole question of the approach to voluntary recruiting was being studied continuously in the light of conditions prevailing to-day.

The Government were fully conscious of the seriousness of the recruiting position. They desired to make it plain that they were determined to maintain the fighting Services on a scale sufficient for the needs of national defence. They had no intention of allowing the strength of our armed forces to be whittled down to a point at which we should be unable to defend ourselves or exert a proper measure of influence on the side of peace and justice in the world.

#### SOVIET ARMY AND NAVY

Last September the Soviet military administration in Germany officially notified that in future the Red Army will be called the Soviet Army. The title of the Red Navy has similarly been changed to Soviet Navy.

## ARMY NOTES

### H.M. THE KING

On 24th September the King and Queen received a Mission from Nepal, headed by Senior Commanding General Sir Baber Shumshere Jung Bahadur Rana who, on behalf of the King of Nepal, bestowed upon the King the honorary rank of Commanding General in the Nepalese Army and presented to His Majesty, as a token of the appointment, a sword and a helmet.

The Princess Royal, Colonel-in-Chief, visited units of the Royal Corps of Signals at Catterick Camp on 30th July.

The Princess Royal, Controller-Commandant, visited units of the Auxiliary Territorial Service at Kirkby, Lancashire, on 20th August. She visited No. 2 Northern Command Formation College at Welbeck Abbey on 23rd August. She attended a staff conference of the A.T.S. in London on 4th September.

The Princess Royal visited units of the A.T.S. and Army Education Centres in Scotland during the last week of September.

The King has approved the following appointments:—

TO BE AIDES-DE-CAMP GENERAL TO THE KING.—General Sir Richard N. O'Connor, K.C.B., D.S.O., M.C. (5th April, 1946); General Sir H. Charles Loyd, K.C.B., D.S.O., M.C. (26th June, 1946); General Sir Daril G. Watson, K.C.B., C.B.E., M.C. (17th August, 1946).

TO BE AIDES-DE-CAMP TO THE KING.—Colonel (temporary Brigadier) E. A. B. Miller, D.S.O., M.C. (1st July, 1946); Colonel (temporary Brigadier) P. D. W. Dunn, C.B.E., D.S.O., M.C. (21st August, 1946); Colonel (temporary Brigadier) G. K. Dibb, C.B.E., M.C. (14th August, 1946); Colonel L. Monier-Williams, M.C., Indian Army (26th May, 1946); Colonel P. V. Harris, C.B.E. (26th February, 1946).

TO BE HON. PHYSICIAN TO THE KING.—Major-General J. C. A. Dowse, C.B., C.B.E., M.C., M.B., late R.A.M.C. (30th June, 1946).

TO BE HON. SURGEON TO THE KING.—Major-General E. A. Sutton, C.B.E., M.C., late R.A.M.C. (22nd July, 1946).

TO BE COLONEL COMMANDANT.—Of the Royal Artillery, Major-General (acting Lieut.-General) O. M. Lund, C.B., D.S.O. (3rd May, 1946).

TO BE REGIMENTAL COLONELS.—Of the Highland Light Infantry, Major-General A. P. D. Telfer-Smollett, C.B., D.S.O., M.C. (14th July, 1946); of the 7th Hussars, R.A.C., Lieut.-Colonel G. Fielden, O.B.E. (1st September, 1946); of The Madras Regiment, Indian Army, Lieut.-General Sir Archibald Nye, K.B.E., C.B., M.C. (10th August, 1946); of The Royal Scots, Major (Hon. Brigadier) N. R. Crockett, C.B.E., D.S.O., M.C. (2nd July, 1946); of the Irish Guards, Field-Marshal Viscount Alexander of Tunis, G.C.B., G.C.M.G., C.S.I., D.S.O., M.C. (28th August, 1946); of The Royal Irish Fusiliers, Major-General G. W. R. Templer, C.B., C.M.G., D.S.O., O.B.E. (23rd June, 1946).

TO BE HONORARY COLONEL OF THE SIKH REGIMENT.—Major-General His Highness Maharaja Sir Yadavindra Singh of Patiala, G.C.I.E., G.B.E., A.D.C. (5th September, 1946).

### HONOURS AND AWARDS

#### GEORGE CROSS

The King has approved the award of the George Cross "in recognition of most conspicuous gallantry in carrying out hazardous work in a very brave manner," to

(a) *Captain S. Latutin*, Somalia Gendarmerie (posthumous).

(b) *Havildar Abdul Rahman*, 3rd Battalion, 9th Jat Regiment, Indian Army (posthumous).

These two awards were for superb and selfless heroism in rescuing comrades from fire and exploding ammunition.



(c) *Major (temporary) H. P. Seagrim*, D.S.O., M.B.E., 19th Hyderabad Regiment, Indian Army (posthumous). This officer was captured and executed by the Japanese in Burma in 1944. The citation ends with the words: "There can hardly be a finer example of self-sacrifice and bravery than that exhibited by this officer, who in cold blood deliberately gave himself up to save others, knowing well what his fate was likely to be at the hands of the enemy."

(d) *Captain (temporary Major) K. A. Biggs*, Royal Army Ordnance Corps.

(e) *Corporal (acting Staff-Sergeant) S. G. Rogerson*, Royal Army Ordnance Corps.

The two above-mentioned awards were for great gallantry at Savernake, Wiltshire, on 2nd January, 1946, when an explosion occurred in an ammunition train.

The following award was announced on 1st August, in recognition of gallant and distinguished services in the Far East:—

*C.B.*—Major-General (acting) E. C. Mansergh, C.B.E., M.C.

#### APPOINTMENTS

The following appointments have been announced:—

UNITED KINGDOM.—Major-General E. Hakewill-Smith, C.B., C.B.E., M.C., to be Commander, Lowland District (November, 1946).

Major-General Sir Noel G. Holmes, K.B.E., C.B., M.C., to be Commander, Aldershot and Hampshire District (September, 1946).

T/Major-General J. Y. Whitfield, C.B., D.S.O., O.B.E., to be Commander, Northumbrian District (October, 1946).

Major-General Sir Arthur Dowler, K.B.E., C.B., to be Director of Infantry, War Office (October, 1946).

A/Major-General J. B. Churcher, D.S.O., to be Commander, 2nd Division (October, 1946).

T/Major-General G. A. Pilleau, C.B.E., M.C., to be President, No. 5 Regular Commissions Board (September, 1946).

T/Major-General G. N. Wood, C.B., C.B.E., D.S.O., M.C., to be President, No. 6 Regular Commissions Board (September, 1946).

T/Major-General V. Eveleigh, C.B., D.S.O., O.B.E., to be President, No. 3 Regular Commissions Board (September, 1946).

A/Major-General R. T. O. Cary, C.B.E., D.S.O., to be Commander, Catterick Sub-District (September, 1946).

Major-General A. C. Duff, C.B., O.B.E., M.C., to be Major-General i/c Administration, Southern Command (November, 1946).

Major-General M. W. M. Macleod, C.B., C.B.E., D.S.O., to be Major-General, British Advisory Staff, Polish Resettlement Corps (September, 1946).

Major-General R. Edgeworth-Johnstone to be Director of Public Relations at the War Office (October, 1946).

A/Major-General J. F. B. Combe, D.S.O., to be Commander, 46th Division.

BURMA.—Major-General Sir Hubert Rance, G.B.E., C.B., to be Governor of Burma (31st August, 1946).

MALAYA.—A/Lieut.-General A. Galloway, C.B., C.B.E., D.S.O., M.C., to be G. O. C.-in-C., Malaya Command (October, 1946).

HONG KONG.—Major-General G. W. E. J. Erskine, C.B., D.S.O., to be G.O.C. Land Forces, Hong Kong (November, 1946).

EAST AFRICA.—Major-General W. A. Dimoline, C.B.E., D.S.O., M.C., to be G.O.C., East Africa (October, 1946).

SOUTHERN RHODESIA.—Major-General Sir John N. Kennedy, K.B.E., C.B., M.C., to be Governor of Southern Rhodesia.

C.M.F.—Lieut.-General Sir John Harding, K.C.B., C.B.E., D.S.O., M.C., to be G.O. C.-in-C., Central Mediterranean Forces (1st October, 1946).

INDIA.—T/Major-General N. V. Watson, C.B., O.B.E., to be Deputy Chief of the General Staff (A), G.H.Q., India.

A/Major-General B. Temple, O.B.E., M.C., to be Director of Staff Duties, G.H.Q., India.

Major-General J. G. Bruce, C.B., D.S.O., M.C., Indian Army, to be Commander, Lahore Area (3rd September, 1946).

FUTURE APPOINTMENTS.—The following future appointments have been announced :

Lieut.-General Sir Philip Christison, K.B.E., C.B., D.S.O., M.C., to be G.O. C.-in-C., Scottish Command (February, 1947).

Lieut.-General Sir Montagu Stopford, K.B.E., C.B., D.S.O., M.C., to be G.O. C.-in-C., Northern Command (February, 1947).

Brigadier E. L. Bols, D.S.O., to be Commander, 6th Airborne Division (January, 1947).

T/Major-General A. D. Ward, C.B., C.B.E., D.S.O., to be Director of Military Operations, War Office (1st January, 1947).

T/Major-General R. G. Feilden, C.B., O.B.E., to be Vice Quartermaster-General, War Office (1st January, 1947).

A/Major-General R. H. B. Arkwright, C.B., D.S.O., to be Director, Royal Armoured Corps, War Office (1st January, 1947).

Lieut.-General Sir Neil Ritchie, K.B.E., C.B., D.S.O., M.C., to be Commander-in-Chief, Allied Land Forces, South-East Asia (February, 1947).

Brigadier W. H. Stratton, C.V.O., C.B.E., D.S.O., to be Chief of Staff, British Army of the Rhine (1st January, 1947).

Brigadier W. S. Tope, C.B., C.B.E., to be Director of Mechanical Engineering, War Office (December, 1946).

Lieut.-General Sir Evelyn H. Barker, K.B.E., C.B., D.S.O., M.C., to be G.O. C.-in-C., Eastern Command.

Major-General F. W. Festing, C.B.E., D.S.O., to be Director of Weapons and Development (1st February, 1947).

GENERAL OFFICER INTERCHANGE.—An arrangement has been reached by the British and Canadian Governments for the interchange of a General Officer appointment between the Imperial Defence College in London and the Canadian Staff College. Lieut.-General G. G. Simonds, Canadian Army, is to be appointed Army Instructor at the Imperial Defence College, where he is now a student, at the beginning of 1947. In return, Major-General J. F. M. Whiteley, now the Army Instructor at the Imperial Defence College, will take up the appointment of Commandant of the Canadian Staff College early in February, 1947.

#### PROMOTIONS

The following promotions have been announced :—

*Generals.*—The following Lieut.-Generals to be Generals :—Sir Daril G. Watson, K.C.B., C.B.E., M.C. (17th August, 1946) ; Sir Miles C. Dempsey, K.C.B., K.B.E., D.S.O., M.C. (14th October, 1946).

*Lieut.-Generals.*—The following Major-Generals (temporary Lieut.-Generals) to be Lieut.-Generals :—Sir William D. Morgan, K.C.B., D.S.O., M.C. (17th August, 1946, with seniority 26th December, 1944) ; Sir John Harding, K.C.B., C.B.E., D.S.O., M.C. (19th August, 1946, with seniority 1st January, 1945) ; Sir Sidney C. Kirkman, K.B.E., C.B., M.C. (14th October, 1946).

The following Major-General (acting Lieut.-General) to be temporary Lieut.-General:—G. I. Thomas, C.B., D.S.O., M.C. (18th September, 1946).

The following Major-General to be acting Lieut.-General:—D. D. Gracey, C.B., C.B.E., M.C., I.A. (28th May, 1946).

*Major-Generals.*—The following Colonels (in most cases temporary or acting Major-Generals) to be Major-Generals:—W. d'A. Collings, C.B., C.B.E. (19th July, 1946, with seniority 9th November, 1944); A. H. S. Adair, C.B., D.S.O., M.C. (25th July, 1946, with seniority 12th November, 1944); C. M. Barber, C.B., D.S.O. (16th August, 1946, with seniority 14th November, 1944); F. W. Festing, C.B., C.B.E., D.S.O. (17th August, 1946, with seniority 23rd November, 1944); N. McMicking, C.B.E., D.S.O., M.C. (19th August, 1946, with seniority 25th January, 1944); J. C. F. Holland, C.B., D.F.C. (31st August, 1946, with seniority 20th April, 1944); W. A. Dimoline, C.B.E., D.S.O., M.C. (6th September, 1946, with seniority 20th June, 1944); Sir Francis W. de Guingand, K.B.E., C.B., D.S.O. (10th September, 1946, with seniority 22nd March, 1945); C. H. H. Vulliamy, C.B., D.S.O. (14th September, 1946, with seniority 11th June, 1943); H. Redman, C.B.E. (21st September, 1946, with seniority 14th August, 1944); J. F. B. Combe, D.S.O. (8th October, 1946, with seniority 16th October, 1944); A. H. Hornby, C.B., C.B.E., M.C. (14th October, 1946, with seniority 5th November, 1944); W. D. A. Williams, C.B., C.B.E. (23rd October, 1946, with seniority 22nd November, 1944).

The following Colonels (acting Major-Generals) to be temporary Major-Generals:—W. R. Revell-Smith, C.B.E., D.S.O., A.M. (14th August, 1946); W. P. Oliver, O.B.E. (3rd August, 1946); L. C. Thomas, C.B.E., D.S.O., M.C. (6th August, 1946); G. C. Ballentine, I.A. (8th June, 1946); N. V. Watson, O.B.E. (3rd April, 1945).

The following Colonels (temporary Brigadiers) to be acting Major-Generals:—B. Temple, M.C. (3rd May, 1946); R. T. O. Cary, C.B.E., D.S.O. (1st September, 1946).

The following Lieut.-Colonel (temporary Brigadier) to be acting Major-General:—J. S. Elliot, M.C. (8th July, 1946).

To be local Major-General:—Colonel (temporary Brigadier) Sir Hubert E. Rance, G.B.E., C.B. (31st August, 1946).

#### RETIREMENTS

The following Generals have retired:—Major-General J. G. Halsted, C.B., O.B.E., M.C. (19th July, 1946); Major-General G. A. Blake, C.B., M.B., K.H.S., late R.A.M.C. (22nd July, 1946); Major-General M. B. Burrows, C.B., D.S.O., M.C., with honorary rank of Lieut.-General (25th July, 1946); General Sir George J. Giffard, G.C.B., D.S.O., A.D.C. (17th August, 1946); Lieut.-General Sir John G. des R. Swayne, K.C.B., C.B.E. (19th August, 1946); Major-General Sir Henry B. D. Willcox, K.C.I.E., C.B., D.S.O., M.C., with honorary rank of Lieut.-General (21st August, 1946); Major-General F. K. Simmons, C.B.E., M.V.O., M.C. (24th August, 1946); Major-General R. P. Pakenham-Walsh, C.B., M.C. (28th August, 1946); Major-General A. E. Percival, C.B., D.S.O., O.B.E., M.C., with honorary rank of Lieut.-General (31st August, 1946); Major-General W. C. Holden, C.S.I., C.B.E., D.S.O., M.C. (31st August, 1946); Major-General Sir Gordon N. Macready, Bt., K.B.E., C.M.G., D.S.O., M.C., with honorary rank of Lieut.-General (6th September, 1946); Lieut.-General Sir Bernard C. Freyberg, V.C., G.C.M.G., K.C.B., K.B.E., D.S.O. (9th September, 1946); Major-General E. G. Miles, C.B., D.S.O., M.C. (10th September, 1946); Major-General Sir Leslie G. Phillips, K.B.E., C.B., M.C. (14th September, 1946); Major-General R. F. B. Naylor, C.B., C.B.E., D.S.O., M.C. (21st September, 1946); Major-General C. A. Heydeman, C.B., M.C. (29th September, 1946); Major-General D. N. Wimberley, C.B., D.S.O., M.C. (8th October, 1946); General Sir Bernard C. T. Paget, G.C.B., D.S.O., M.C. (14th October, 1946); Major-General L. Browning, C.B., O.B.E., M.C. (23rd October, 1946).

## DESPATCHES

IRAQ, EAST SYRIA AND IRAN, 1941.—A Despatch submitted on 18th October, 1942, by General Sir Archibald Wavell, G.C.B., C.M.G., M.C., Commander-in-Chief, India, describing operations in Iraq, East Syria and Iran from 10th April, 1941, to 12th January, 1942, was published in the *London Gazette* of 14th August, 1946.

MIDDLE EAST; JULY-OCTOBER, 1941.—A Despatch submitted on 8th March, 1942, by General Sir Claude Auchinleck, K.C.B., C.S.I., D.S.O., O.B.E., Commander-in-Chief, the Middle East Forces, describing operations in the Middle East from 5th July, 1941, to 31st October, 1941, was published in the *London Gazette* of 21st August, 1946.

PERSIA AND IRAQ, 1942-43.—A Despatch submitted on 8th April, 1943, by General Sir H. Maitland Wilson, G.B.E., K.C.B., D.S.O., Commander-in-Chief, Persia and Iraq Command, covering the period 21st August, 1942, to 17th February, 1943, was published in the *London Gazette* of 28th August, 1946.

SOUTHERN FRENCH CAMPAIGN.—A "Report by the Supreme Allied Commander, Mediterranean (now Field-Marshal Lord Wilson) to the Combined Chiefs of Staff on the operations in Southern France, August, 1944" has been published by H.M. Stationery Office—price 1s.

NORTH-WEST EUROPE, 1944-45.—A Despatch submitted on 1st June, 1946, by Field-Marshal the Viscount Montgomery of Alamein, K.C.B., D.S.O., describing operations in North-West Europe from 6th June, 1944, to 5th May, 1945, was published in the *London Gazette* of 4th September, 1946.

EASTERN THEATRE, BASED ON INDIA, 1942.—A Despatch submitted on 27th September, 1943, by Field Marshal the Viscount Wavell, G.C.B., C.M.G., M.C., A.D.C., describing operations in the Eastern Theatre, based on India, from March, 1942, to 31st December, 1942, was published in the *London Gazette* of 18th September, 1946.

## INFANTRY REORGANIZATION

Details of the forthcoming reorganization of the Infantry of the British Army were made known on 24th October by a statement in the House of Commons from Mr. Bellenger, Secretary of State for War, and a memorandum issued by the War Office. Mr. Bellenger said:—

Owing to the changed commitments of the post-war Army and in the light of war experience, it has been found necessary to modify the pre-war infantry regimental system, commonly known as the Cardwell system, which has been found too rigid for modern conditions.

In view of the great traditions and fighting records of the various infantry regiments, however, it has been decided that the regimental system shall remain as a feature of the post-war Army. To achieve greater flexibility in the flow of reinforcements in war and to overcome difficulty of posting in peace, it is proposed to group the regiments into 15 separate groups based on territorial or traditional affinity. For the purpose of enlistment, the group will now become the corps in place of the regiment, and the Royal Warrant will be amended accordingly. However, wherever possible, soldiers will be posted to battalions of the regiments of their choice.

The modern organization of the post-war Army, involving the inclusion of armoured and airborne formations, will ultimately result in a reduction of the number of infantry battalions required. It is not, however, proposed to disband any Regular infantry battalions of the line. It is intended to introduce a scheme whereby a certain number of Regular battalions will be placed in suspended animation when a reduction becomes necessary. Suspended animation involves the relegation of a battalion to a reserve category, with no officers or men borne on its establishment. It is not proposed that battalions shall stay in suspended animation permanently but that they shall be changed over from time to time, the changes to coincide with reliefs of battalions in oversea stations.



Notwithstanding the introduction of the group system it is not intended to abolish the pre-war regimental depots. These will be incorporated in primary training centres, which will be formed in the location of pre-war infantry regimental depots. Recruits of all arms of the Service will receive their first six weeks' basic training in these primary training centres. The recruit, other than the Regular enlistment, will, at this stage, belong to the General Service Corps, and the training carried out will be common to all arms. During this period the recruit will also pass through personnel selection tests to determine his general intelligence grading, and, in the case of non-Regular enlistments only, the arm of the Service for which he is most suited.

On completion of this six weeks primary training the recruit will then go to the Corps Training Centre of the arm of the Service for which he has been selected, and while there complete his recruit's training. It will be seen that, as the primary training centre handles all arms, it cannot in itself provide, as in the past, a regimental link with the county. For this reason it is proposed to retain at the primary training centre a small infantry regimental depot.

The War Office states in its memorandum that the group system has been adopted as the only solution to the problem imposed by the conflicting factors that "a Corps of Infantry, which would seal the fate of all the infantry regiments, would be the best organization from the purely logistic angle"; but that "the old regiments are now, and will in the future remain, a fundamentally vital factor in the fighting morale of the infantry."

The full advantages of the system will become apparent in war. So long as the number of infantry battalions raised during expansion in a group is not out of proportion to the population which supports them, and so long as casualties are not too heavily borne by some groups and not by others, reinforcement should normally be done entirely within groups.

Certain regiments have been excluded from the main groups "because they fulfil certain functions," but if it is found later that battalions are no longer required in these specialist roles "these regiments can be incorporated in the groups with which they have the closest territorial or traditional affinity." No official names have yet been given to the groups, which are:—

(a) Grenadier Guards, Coldstream Guards, Scots Guards, Irish Guards, Welsh Guards.

(b) The Royal Scots, The Royal Scots Fusiliers, The King's Own Scottish Borderers, The Cameronians.

(c) The Queen's Royal Regiment, The Buffs, The Royal Fusiliers, The East Surrey Regiment, The Royal Sussex Regiment, The Queen's Own Royal West Kent Regiment.

(d) The King's Own Royal Regiment, The King's Regiment, The Lancashire Fusiliers, The East Lancashire Regiment, The Border Regiment, The South Lancashire Regiment, The Loyal Regiment, The Manchester Regiment.

(e) The Royal Northumberland Fusiliers, The West Yorkshire Regiment, The East Yorkshire Regiment, The Green Howards, The Duke of Wellington's Regiment, The York and Lancaster Regiment.

(f) The Royal Warwickshire Regiment, The Lincolnshire Regiment, The Leicestershire Regiment, The Sherwood Foresters.

(g) The Royal Norfolk Regiment, The Suffolk Regiment, The Bedfordshire and Hertfordshire Regiment, The Essex Regiment, The Northamptonshire Regiment.

(h) The Devonshire Regiment, The Gloucestershire Regiment, The Hampshire Regiment, The Dorsetshire Regiment, The Royal Berkshire Regiment, The Wiltshire Regiment.

(j) The Somerset Light Infantry, The Duke of Cornwall's Light Infantry, The Oxfordshire and Buckinghamshire Light Infantry, The King's Own Yorkshire Light Infantry, The King's Shropshire Light Infantry, The Durham Light Infantry.

(k) The Cheshire Regiment, The Worcestershire Regiment, The South Staffordshire Regiment, The North Staffordshire Regiment.

(l) The Royal Welch Fusiliers, The South Wales Borderers, The Welch Regiment.

(m) The Royal Inniskilling Fusiliers, The Royal Ulster Rifles, The Royal Irish Fusiliers.

(n) The Black Watch, The Highland Light Infantry, The Seaforth Highlanders, The Gordon Highlanders, The Cameron Highlanders, The Argyll and Sutherland Highlanders.

(o) The Middlesex Regiment.

(p) The King's Royal Rifle Corps, The Rifle Brigade.

Under the "suspended animation" system each battalion will in turn serve a tour of foreign service, a tour of home service, and then a period of "suspended animation." It is hoped that the average tours will be eight ten years, home service; 10-15 years, foreign service; and 10-15 years "suspended animation."

The advantage of this above other systems is that it avoids disbanding Regular battalions; it allows the run-down of the Infantry to be accomplished without a world-wide shuffle of battalions; it enables the run-down to be done gradually and, should an increase in the number of battalions in commission at any time be necessary, they can be added very easily; it is acceptable to the Infantry of the line and has been accepted by the Colonels of all infantry line regiments.

The method of reduction of the number of battalions of the Brigade of Guards has not yet been finally settled.

A small infantry regimental depot is to be retained as part of the County Primary Training Centre organization, for "it is very essential that the link between the infantry fighting spirit and morale is built up mainly on the regimental spirit. The roots of the infantry regiment are usually deep in its county, and if these roots are severed the regimental spirit will die."

The responsibilities of the infantry regimental depot will include the safe custody of the Colours and property of Regular battalions in "suspended animation"; maintenance of the regimental link with the Territorial Army and civil side of the county; the holding of Regular officers and N.C.O.'s on the extra regimental employment list and those awaiting transfer to reserve on completion of their colour service.

The grouped I.T.C. will be responsible for the Corps training of all recruits and the holding and outward draft of infantry training of the group.

Circumstances may arise in peace and war in which it will still be necessary to transfer men between groups. "Such a situation may be caused by an undue proportion of the battalions of a group being oversea at one time, which will certainly cause difficulties in finding drafts to keep the foreign battalions up to strength. In such an event it may be necessary to draw men from outside the group. In this case personnel will only be drawn from groups of close territorial or other affinity."

Before the new groups can be organized the Royal Warrant will have to be amended, but notwithstanding any amendment the rights of existing Regular soldiers whereby they cannot be transferred in peace-time from their own regiment are safeguarded by the Army Act.

#### THE POLISH RESETTLEMENT CORPS

Recruitment of officers and men of General Anders' army into the Polish Resettlement Corps began on 11th September.

This corps is to be part of the British Army, under military law and under control of the War Office. Officers will receive an emergency Commission as Second Lieutenant, but will be paid what they were paid in the Polish Army. Officers and men will be asked to serve for two years, but should a civilian job be found for a member he will be put on

the reserve. Members will qualify for gratuities, and wives and families will be accommodated as near as possible to wherever members of the corps are housed. The corps, the full strength of which is expected to be about 130,000, will be paid by the British Government, and its members will have to pay British taxes. The basic pay of a private will be 3s. 3d. a day. There will be family allowances.

No arms will be carried. Formations are being broken up and all military exercises forbidden. Any man who wishes may volunteer to return to Poland.

## MISCELLANEOUS

**ARMY COUNCIL.**—The War Office made the following announcement at the end of July last:—

In order to avoid future changes of the Military Members of the Army Council occurring within a brief period, the tenures of appointments have been adjusted so that the Quartermaster-General to the Forces will vacate his post in June, 1947, the Adjutant-General to the Forces in June, 1948, and the Chief of the Imperial General Staff in June, 1949.

**SANDHURST.**—The following is quoted from *The Observer* of 20th October, 1946:—

"In slow time, with measured tread, the last Company of Infantry Cadets ever to leave the Royal Military College, Sandhurst, last week followed their Colours up the steps and, file by file, disappeared within the grey Doric portico. True, the place itself, the 'Old Buildings,' with their look of 'The Iron Duke' still upon them, and the 'New Buildings,' with their raw look of the Haldane period which time alone can temper, the gym, the riding schools, unhorsed these seven years, the fair lawns, the lake, the rhododendrons and the trees will still be there. But Sandhurst, as the cradle of the Infantry, is no more. 'With effect from 1 Jan. '47,' as they put it in the Army, it will rightly and necessarily become a kind of all-armed Academy. Time marches on, mechanism comes grinding in. The Infantry marches out. The seniors and veterans all agreed that no company had marched more gallantly, kept better dressing, or presented arms more smartly, than did this departing 'C' company. No red-coat ever again? Well, the October sun did make a study in scarlet, and its fire lit the chapel windows as Sandhurst's last Colours were placed on the altar."

**BLLENHEIM AND MINDEN.**—On 3rd August, The Suffolk Regiment and The Bedfordshire and Hertfordshire Regiment held their annual combined parade at the Infantry Training Centre, Bury St. Edmunds, in joint celebration of the battles of Blenheim and Minden. This ceremony was probably the last of its kind, as there will shortly be a reversion to regimental depots.

**MINDEN DAY.**—The 1st Battalion, King's Own Yorkshire Light Infantry, held its annual Minden Day celebration in the city of Minden itself on 1st August.

**52ND DIVISION.**—A Dutch memorial, "in gratitude to our liberators," was unveiled at Flushing, Walcheren Island, on 3rd August, to commemorate the landing there on November 1, 1944, of the 52nd (Lowland) Division. Major-General Edmund Hakewill-Smith, commander of the division, unveiled the memorial in the presence of many military and civil authorities. The Burgomaster of Westkapelle, Walcheren, where the 52nd Division made a simultaneous landing, was present.

**SEAFORTH HIGHLANDERS IN JAVA.**—A service was held on 28th August in the grounds of the English church in Batavia in memory of all ranks of The Seaforth Highlanders who gave their lives in Java in the years 1811-16 and 1945-46.

The service was held—on the anniversary of his death—at the grave of Lieut.-Colonel William Campbell, of H.M. 78th Regiment, "who died on 28th August, 1811, of wounds received on the 26th day of that month while bravely leading on his regiment to attack the strongly fortified line of Cornelis, defended by a gallant enemy." This is the inscription on his tombstone, and a wreath was laid by the Commanding Officer.

Casualties suffered by the regiment during the recent period are two officers killed and three wounded and six other ranks killed and 22 wounded.

**EFFICIENCY MEDAL.**—The War Office announced on 30th August that the Efficiency Medal (Territorial/Militia) and Clasps may be awarded to officers and other ranks of the Territorial Army, the Auxiliary Territorial Service, and to other ranks of the Supplementary Reserve (Category A and B) who were serving as such on 2nd September, 1939, irrespective of whether their service was commissioned, other rank, or a combination of both.

The qualifications are :—

(a) Twelve years' continuous service (embodied war service from 3rd September, 1939, may count two-fold).

(b) A minimum of 12 trainings (an embodied period of two months will count as two trainings, but not more than two trainings may be credited during any year reckoned from January 1 to December 31).

(c) Service as a Regular Army (emergency commission) officer may count as qualifying service provided that the officer was serving in the ranks on an auxiliary forces attestation on September 2, 1939, and was embodied under Army Order 158 of 1939.

(d) Service in the Royal Navy, the Regular Army, or the R.A.F. during the embodiment of the Territorial Army may count provided that it immediately followed embodied service in the Territorial Army.

(e) Officers and other ranks who, during the 1939-45 war were discharged owing to wounds or illness contracted on service, and who voluntarily re-enlisted during the period of embodiment, will not be regarded as having broken continuity in service, although the period between discharge and re-enlistment will not count.

The following periods will not be regarded as breaking continuity but may not be included in the 12 years' service required :—

(a) Periods of "Absence without Leave," in "Detention," or "Civil Custody."

(b) Periods relegated to W (T) Reserve, (R.A.R.) Supplementary Reserve, or Unemployed List on compassionate grounds.

## AUSTRALIA

### INTERIM ARMY FOR AUSTRALIA.

The Australian Deputy Prime Minister and Minister for the Army, Mr. F. M. Forde, on 5th September announced that the Government would enlist an interim Army of 39,000 and a permanent military force of 17,950, including 4,000 reinforcements, pending determination of the Commonwealth's future defence policy. All soldiers not wishing to continue to serve in the Army would be discharged by 1st February.

Mr. Forde said the interim force had been decided on to meet heavy commitments on the recommendation of the Military Board. The Government had to provide an Australian component for the British Commonwealth Occupation Force in Japan and maintain an organization for the completion of demobilization, the preparation for post-war forces, and the storage and maintenance of equipment and stores. Enlistments in the interim force would be for two years.

### HONOURS AND AWARDS

The following award was announced on 12th September, 1946, in recognition of gallant and distinguished services while a prisoner of war :—

**C.B.**—Major-General (temporary) C. A. Callaghan, C.M.G., D.S.O., V.D., Australian Military Forces.



## NEPAL

**HONOURS.**—The King has been pleased to make the following appointments, both dated 24th September, 1946:—

*To be an Honorary G.C.V.O.*—Senior Commanding General Baber Shumshere Jung Bahadur Rana, G.B.E., K.C.S.I., K.C.I.E., Nepalese Army.

*To be an Honorary K.B.E.*—Lieut.-General Shanker Shumshere Jung Bahadur Rana, Nepalese Army.

## NOTICE

## 26TH INDIAN DIVISION REUNION SOCIETY

Arrangements have been made with the Normandie Hotel, Knightsbridge, London, S.W.1, for the use of their premises as a 26th Indian Division Reunion Centre. An Address Book will be kept at the Reception Desk.

The Honorary Secretary of the Divisional Reunion Society is Lieut.-Colonel B. E. Greene, M.C., c/o Lloyds Bank, Kingsway, London, W.C.2, or 112, Stratford Court, Stratford Road, London, W.1.

## NAVY NOTES

### GREAT BRITAIN

#### H.M. THE KING

**SOUTH AFRICAN TOUR.**—The staff to accompany the King and Queen and the Princesses on their visit to South Africa in February, 1947, was announced on 18th September. Sir Alan Lascelles, Private Secretary, will be Chief of Staff. Other members of the Royal Household include :—

Major Thomas Cockayne Harvey, Private Secretary to the Queen ;  
Surgeon Rear-Admiral Henry E. Y. White, Medical Officer ;  
Major Michael Adeane, Assistant Private Secretary to the King ;  
Captain (S) Lewis Ritchie, R.N., Press Secretary ;  
Wing Commander Peter Townsend, R.A.F., Equerry ; and  
Lieutenant-Commander Peter Ashmore, R.N., Equerry.

The new battleship "Vanguard," Captain W. G. Agnew, is being fitted out in Portsmouth Dockyard for the tour. Having been designed as flagship of a Commander-in-Chief, she has accommodation which it is practicable to adapt in a short time and with comparatively small alterations for the Royal Family and their entourage. Most of the furniture for the Royal apartments will be lent from the Royal yacht "Victoria and Albert."

**APPOINTMENTS**—The following officers have been appointed as Naval Aides-de-Camp to the King from 5th July, 1946, in place of the officers stated, promoted to Flag Rank :—

Captain P. K. Enright, C.B.E., in place of Captain P. Ruck-Keene, C.B.E., D.S.O.

Captain F. C. Flynn, in place of Captain P. W. B. Brooking, D.S.O.

The following officers have been appointed as Naval Aides-de-Camp to the King from 5th July, 1946, in place of the officers stated, placed on the Retired List :—

Captain I. A. P. MacIntyre, C.B., C.B.E., D.S.O., in place of Captain Sir Philip W. Bowyer-Smith, Bt.

Captain H. H. McWilliam, in place of Captain N. V. Grace.

Captain (Commodore, 2nd class) D. Young-Jamieson, in place of Captain J. G. Y. Loveband.

Captain C. C. A. Allen, in place of Captain (Commodore, 2nd class) H. B. Crane, C.B.E.

Captain C. Caslon, C.B.E., in place of Captain Q. D. Graham, C.B.E., D.S.O.

Captain W. H. Slayter, C.B., D.S.O., D.S.C., in place of Captain A. H. Maxwell-Hyslop, A.M.

Captain (S) G. H. Bankart, C.B.E., has been appointed a Naval Aide-de-Camp to the King from 10th September, 1946, in place of Captain (S) E. C. Fenton, placed on the Retired List.

Colonel C. R. W. Lamplough, C.B.E., D.S.C., has been appointed a Royal Marine Aide-de-Camp to the King from 30th April, 1946, in place of Colonel Commandant (temporary Brigadier, acting Major-General) H. T. Newman, C.B.E., promoted to Major-General.

Surgeon Rear-Admiral C. E. Greeson, C.B., has been appointed an Honorary Physician to the King from 31st August, 1946, in place of Surgeon Rear-Admiral F. J. D. Twigg, C.B.E., placed on the Retired List.

#### FIRST LORD OF THE ADMIRALTY

Concurrently with the publication of a White Paper proposing the formation of a Ministry of Defence, it was announced on 5th October that Mr. A. V. Alexander had

been appointed Minister without Portfolio. He will remain in the Cabinet, and it is the Prime Minister's intention to submit his name for appointment as Minister of Defence when the legislation has been passed which is necessary to establish the new Ministry. Mr. Alexander was succeeded as First Lord of the Admiralty by Mr. George H. Hall, formerly Colonial Secretary. Mr. Hall was Civil Lord of the Admiralty in 1929-31 and Financial Secretary in 1942-43. The King has approved that the dignity of a Viscountcy of the United Kingdom be conferred upon Mr. Hall.

## FLAG APPOINTMENTS

The following appointments were announced on 30th July:—

Rear-Admiral A. R. M. Bridge to be Rear-Admiral, Aircraft Carriers and Air Stations, British Pacific Fleet and East Indies, in succession to Rear-Admiral C. H. L. Woodhouse, shortly.

Rear-Admiral C. H. L. Woodhouse to be Rear-Admiral Commanding Fifth Cruiser Squadron, in succession to Rear-Admiral R. M. Servaes, shortly.

Rear-Admiral H. Hickling to be Rear-Admiral, Training Battleships, Home Fleet, to date mid-August, 1946.

Rear-Admiral Hickling hoisted his flag in H.M.S. "Nelson" on 14th August. The Training Battleship Squadron, based on Portland, consists of the "Nelson," "Howe" and "Anson." It represents a new development in training methods, by which recruits will now receive shipboard training much earlier in their career. The decision to use the "Howe" and "Anson" as training ships was made to ease the accommodation position ashore, and to keep these modern ships serviceable and in commission without having to use full complements of trained men.

The following appointments were announced on 23rd July:—

Vice-Admiral Sir Eric J. P. Brind to be President of the Royal Naval College, Greenwich, in succession to Commodore A. W. S. Agar, V.C., to date September, 1946. Vice-Admiral Brind took up this post on 3rd October. The College had to curtail its instructional work during the War, but has now virtually returned to its peace-time functions.

Rear-Admiral H. A. Packer to be Rear-Admiral Commanding Second Cruiser Squadron, in succession to Rear-Admiral A. E. M. B. Cunninghame-Graham, to date October, 1946.

ENGINEER-IN-CHIEF.—It was announced on 3rd October that Rear-Admiral (E) Denys C. Ford is to be promoted to Vice-Admiral (E) and to be Engineer-in-Chief of the Fleet, in succession to Engineer Vice-Admiral Sir John Kingcome, to date 25th January, 1947.

Rear-Admiral Ford is the first officer of the common entry system introduced in 1903 to reach the highest post in naval engineering. He was a member of the first term of Naval Cadets who entered Osborne College in September, 1903, was promoted to Lieutenant in March, 1913, and was among the first group selected to specialize in engineering in August of that year. He served afloat as Lieutenant (E) in the war of 1914-18, and during the late war was Fleet Engineer Officer on the Staff of the Commander-in-Chief, Home Fleet.

## ADMIRALTY APPOINTMENT

Captain R. St. V. Sherbrooke, V.C., D.S.O., R.N., has been appointed Director of Craft and Amphibious Material, Admiralty, in succession to Captain W. L. G. Adams, R.N., from 20th October.

## PROMOTIONS AND RETIREMENTS

Rear-Admiral C. S. Daniel, C.B., C.B.E., D.S.O., Third Sea Lord and Controller of the Navy, has been promoted to Vice-Admiral, to date 23rd August, 1946.

Captain (Retired) F. E. P. Hutton, C.B., has been promoted to Rear-Admiral (Retired), to date 1st July, 1946.

The following were announced on 16th September:—

Admiral Sir William J. Whitworth, K.C.B., D.S.O., to be placed on the Retired List, to date 15th September, 1946.

Vice-Admiral Sir Robert L. Burnett, K.C.B., K.B.E., D.S.O., to be promoted to Admiral in H.M. Fleet, to date 15th September, 1946.

Vice-Admiral Sir Arthur M. Peters, K.C.B., D.S.C. (Retired), to be promoted to Admiral (Retired), to date 15th September, 1946.

Rear-Admiral J. M. Mansfield, C.B., D.S.O., D.S.C., to be promoted to Vice-Admiral in H.M. Fleet, to date 15th September, 1946.

In the *London Gazette* on 26th July, it was announced that Vice-Admiral Sir H. Bernard Rawlings, G.B.E., K.C.B., had been placed on the Retired List, to date 23rd August, 1946.

On 24th September the Admiralty announced that, consequent upon the promotion of Admiral Sir Robert L. Burnett, Vice-Admiral Rawlings had been promoted to Admiral (Retired), to date 15th September, 1946.

## HONOURS AND AWARDS

**NEW PEERS' TITLES.**—It was announced in the *London Gazette* on 27th August that the King had conferred the dignity of a Viscountcy of the United Kingdom upon Acting Admiral Lord Louis Francis Albert Victor Nicholas Mountbatten, by the name, style, and title of Viscount Mountbatten of Burma, of Romsey, in the County of Southampton, and his heirs male; and in default of such issue with remainder to his eldest daughter Patricia Edwina Victoria Mountbatten, by the name, style, and title of Viscountess Mountbatten of Burma, of Romsey, in the County of Southampton, and her heirs male; and in default of such issue to every other daughter of Lord Louis Mountbatten and to their heirs male.

It was announced in the *London Gazette* on 24th September that the King had conferred the dignity of a Barony of the United Kingdom upon Admiral Sir Bruce Austin Fraser, and the heirs male of his body lawfully begotten, to be known by the name, style, and title of Baron Fraser of North Cape, of Molesey, in the County of Surrey.

## PERSONNEL

**ENGINEER COMMISSIONS.**—A limited number of permanent Commissions in the Engineering branch of the Royal Navy are to be granted, and applications from released officers who have held Commissions as temporary R.N. (E) or R.N.V.R. (E) officers, and from R.N.V.R. (A) officers who were employed on air engineering duties, will be considered. Particulars may be obtained from the Secretary of the Admiralty (C.W. Branch II), Admiralty, London, S.W.1.

**SUPPLY COMMISSIONS.**—The Admiralty invites applications for a limited number of permanent Commissions in the Supply and Secretariat branch of the Royal Navy. Permanent and temporary officers of the R.N.R. and R.N.V.R. who have been released are eligible to apply, provided they were between 22 and 32 on 1st September, 1946, and had carried out a minimum of three years mobilized service, including one year as an officer. Particulars may be obtained from the Secretary of the Admiralty (C.W. Branch), Admiralty, London, S.W.1.

**R.N. COLLEGE, DARTMOUTH.**—Cadets of the Royal Naval College returned to Dartmouth, Devon, at the opening of the new term on 21st September. The College was temporarily transferred in 1942 to Eaton Hall, Chester.



**SPECIAL ENTRY CADETS.**—Prospective candidates for naval cadetships (special entry) were warned in September that the anticipated examination in January, 1947, would not be held. It has been superseded by the Combined Entrance Examination for (1) Naval Cadetships (special entry), (2) entry to the Royal Military Academy, Sandhurst, and (3) entry to the Royal Air Force College, Cranwell. The first of these combined competitions, conducted by the Civil Service Commission, was due to begin on 10th December, 1946.

**SERVICE CONDITIONS.**—A summary of improvements in the conditions of service in the Fleet, present and prospective, was issued by the Admiralty on 29th August. It has been approved in principle that men of the Royal Navy are in future to be provided with married quarters to the same extent as those of the other Services. Families of those "appointed to a normal commission in a seagoing ship based on a port abroad" are to be allowed free passages to that port, and removal expenses. Neither of these privileges is likely to become available immediately. Cooking arrangements in men-of-war are being modernized as ships become due for large refit. Conditions in which compassionate leave may be granted to men serving abroad have been eased; such leave will be granted in exceptional circumstances to men serving sentences of detention. The liberty boat system, by which a rating had to wait for a "liberty boat" before being allowed "ashore" from barracks, has been abolished. Greenwich Hospital funds are to be made more fully available for compassionate grants by being freed from the contributions to "age pensions" to which they had been subject.

**NAVAL AIR PILOTS.**—A new scheme for the manning of naval aircraft was announced by the Admiralty on 14th September. The majority of pilots will be ratings, the remainder being general service R.N. and R.M. officers trained for the dual functions of pilot and observer. Rating pilots will be mainly recruited from civil life; a small proportion will be recruited from aircraft artificers and Royal Marines for temporary flying service, and a few ratings from other branches will be allowed to transfer. Only continuous service rating pilots and those hostilities-only rating pilots accepted for an extended service engagement will be transferred to the new pilot rates, which will be as follows:—

<i>New rate.</i>			<i>Daily rate of pay.</i>
Probationary Pilot	...	...	7s. during flying training.
Pilot IV	...	...	10s. 6d.
Pilot III	...	...	12s. 6d.
Pilot II	...	...	14s. 6d.
Pilot I	...	...	16s. 6d.

Incremental and badge pay are payable in addition. Aircraft artificer pilots will be paid a flying allowance in addition to their normal rates of pay. Rating pilots will be eligible for selection for promotion to Warrant Air Officer and for direct promotion to Commissioned officer in the Executive branch. In view of the number of aircrew trainees and of the waiting list of "Y" entry candidates, there is little likelihood of further candidates from civil life being required in the immediate future.

**NEW ELECTRICAL SCHOOL.**—H.M.S. "Collingwood" at Fareham, as was announced in the August issue of the *JOURNAL*, is in process of conversion to a permanent school for radar and electrical training for officers and men of the "L" or electrical branch. Eventually, all officers joining this branch will receive six years training, the first three of which will be spent at Cambridge University, where the first group has begun study this autumn. Ratings for the branch will be drawn from general service entries.

**BIRD WATCHING SOCIETY.**—Bird watching is to be officially encouraged in the Royal Navy, and the Admiralty states that if support is adequate a Royal Naval Bird Watching Society will be formed.

**PRISONERS OF WAR UNACCOUNTED FOR.**—An Order in Council of 24th September, published in the *London Gazette* on the 27th, sanctions the stoppage of naval pay and allowances, at Admiralty discretion, in respect of officers and ratings of the Royal Navy

previously known to be in enemy hands and who were still unaccounted for, in view of the long period which had elapsed without any news of their whereabouts or ultimate fate.

#### MATERIAL AND DOCKYARDS

**CIVILIAN PRODUCTION.**—As a peace-time measure to prevent unemployment, H.M. Dockyards are being made available for the production of certain articles for civilian use. A report on their surplus capacity for this purpose was made to the London Regional Board for Industry by the Admiralty. It was emphasised that the work to be undertaken was intended to relieve congestion, and not to establish commercial competition. Among the articles mentioned were bins, water-tanks, wheel-barrows, pillar-boxes, street lamps, meat safes, furniture and prefabricated house carcasses.

**Devonport Dockyard,** it was announced in September, is to build the fore part of a 13,000-ton merchant vessel under the Admiralty scheme to keep the Royal Dockyards employed. When the half ship is finished it will be towed away and joined to the after-portion of the original ship, which was mined during the war and is lying on a South Wales beach.

**GREENOCK DOCKYARD CLOSED.**—The Naval Dockyard at Greenock was closed on 31st July. The change meant little interference with civilian employment, but houses requisitioned by the Navy were being given up. Greenock was a large base and assembly anchorage for Atlantic convoys, and also the main embarkation port for troops going oversea.

**FASLANE PORT, GARELOCH.**—The pre-invasion port built at Faslane, Gareloch, Clydeside, was taken over on 15th August by Metal Industries, Limited, for development for marine salvage, towage and shipbreaking.

**DEMOLITION OF H.M.S. "IRON DUKE"**—The first demolition operation which is being undertaken at Faslane is that of H.M.S. "Iron Duke," Admiral Jellicoe's flagship at Jutland, which was salvaged by the Company at Scapa Flow and taken to the Gareloch in August.

**DEMOLITION OF THE "MARSHAL SOULT."**—The monitor "Marshal Soult," built in 1915, arrived at a shipbreaking yard at Troon, Ayrshire, on 5th August.

**H.M.S. "LEVIATHAN."**—The unfinished aircraft carrier "Leviathan" arrived at Portsmouth in tow from the Tyne in July, and has been moored in the Dockyard until it is possible to complete her.

**LAUNCH.**—A new all-welded destroyer, the "Scorpion," was launched from the yard of J. Samuel White & Co. at Cowes on 15th August. The "Scorpion" is the twelfth ship to bear this name in the Royal Navy.

**PORTSMOUTH DOCKYARD CHURCH.**—The Admiral Superintendent of Portsmouth Dockyard—Vice-Admiral L. Vaughan Morgan, appeals for subscriptions towards the provision of a suitable east end window for the Dockyard Church of St. Ann, which was badly damaged by enemy action in the War. The cost will be about £900, towards which the Admiralty will give a grant, but the greater part will need to be raised by private subscription. St Ann's is the oldest church ashore in the Navy, and has always been regarded as the cathedral church of the Service.

#### TRANSFERS TO ALLIED NAVIES

**H.M.S. "COLOSSUS."**—The aircraft carrier "Colossus" was transferred on loan to the French Navy at a ceremony at Portsmouth on 6th August, at which Mr. Attlee, the Prime Minister, was present and addressed her new ship's company. Members of the latter were brought to Portsmouth in the battleship "Richelieu." On 6th August also, 30 officers and 330 other ranks from the "Richelieu" visited the City of London and were entertained by the Lord Mayor and Corporation.

**SHIPS FOR HOLLAND.**—Two ships from the Royal Navy which have been acquired by the Royal Netherlands Navy arrived at Portsmouth in August. They were the escort carrier "Karel Doorman," formerly the "Nairana," and the destroyer "Kortenaer," formerly the "Scorpion."

**SHIPS FOR NORWAY.**—It was announced in October that the destroyers "Cromwell," "Crystal" and "Crozier" were to be transferred to the Royal Norwegian Navy. On 5th September, the submarines "Venturer," "Votary" and "Viking" were formally transferred at Rothesay, Firth of Clyde, and renamed the "Utstein," "Uthaug" and "Utvaer."

**SUBMARINES FOR DENMARK.**—Two of three British submarines which Denmark has leased from Great Britain for three years, the "Vulpine" and "P.52," arrived at Copenhagen on 7th September. The Danish Navy has the option of purchasing the submarines when the lease expires.

#### VISITS AND CRUISES

**VISIT TO RUSSIA.**—On 21st July, a few days after his return from service as Commander-in-Chief, British Pacific Fleet, Admiral Sir Bruce Fraser left Portsmouth in the aircraft carrier "Triumph," Captain H. W. Faulkner, accompanied by the destroyer "Rapid," Lieutenant D. P. Willan, on a visit to the Soviet Union and to attend the celebration of Red Navy Day in Moscow on 28th July. The vessels arrived at Kronstadt on the 26th, and shore leave was given for organized parties to visit Leningrad, 20 miles away. In Moscow, Admiral Fraser received the Order of Suvarov, First Class, for successful operations in securing the passage of Allied convoys to the U.S.S.R., and also the sinking of the German battle cruiser "Scharnhorst."

**MEDITERRANEAN CRUISE.**—The Mediterranean Fleet under the command of Admiral Sir Algernon Willis left Malta on 18th September for a cruise in the Eastern Mediterranean until November. The itinerary included visits to ports in the South Aegean, Crete, Cyprus and Egypt. This was a resumption of normal peace-time routine, during which sea and harbour exercises were carried out. The Fleet sailing regatta was arranged to take place off Argostoli, in Cephalonia, in the last week of October.

**H.M.S. "GLASGOW" AT DAR-ES-SALAAM.**—The cruiser "Glasgow," flying the flag of Vice-Admiral Sir Arthur Palliser, Commander-in-Chief, East Indies, arrived on 2nd September at Dar-es-Salaam for the first peace-time visit of a flagship since 1939. A parade by detachments of sailors and marines from the ship took place on 6th September, which was witnessed by many thousands of Africans, Asians and Europeans. The Governor of Tanganyika, Sir William Battershill, took the salute.

#### ROYAL NAVAL VOLUNTEER RESERVE

**PERMANENT DIVISIONS RE-FORMED.**—It was announced on 1st October that the Admiral Commanding Reserves is reconstituting the permanent R.N.V.R. Divisions which were authorised before the War. Divisions are being set up with headquarters as follows:—

London.—H.M.S. "President," King's Reach, E.C.4, and H.M.S. "Chrysanthemum."

Sussex.—R.N.V.R. Battery, Hove, and R.N.V.R. Battery, Newhaven (outlying unit).

Severn.—H.M.S. "Flying Fox," Bristol.

Mersey.—H.M.S. "Eaglet," Liverpool, and H.M.S. "Irwell," Birkenhead.

Clyde.—R.N.V.R. Headquarters, Whitfield Road, Govan, and H.M.S. "Carrick," Greenock.

Ulster.—H.M.S. "Caroline," Belfast.

Forth.—H.M.S. "Claverhouse," Leith.

Tay.—H.M.S. "Cressy," Dundee.

Tyne.—H.M.S. "Calliope," Newcastle, and H.M.S. "Satellite," South Shields (outlying unit).

Humber.—Heden Road, Hull.

Southampton.—No headquarters yet (Commanding Officer is Commander E. J. Strowlger, D.S.C., R.N.V.R., Admirals Cottage, Admirals Road, Parkgate, Swanwick, near Southampton).

Some of these ships may be replaced by more modern vessels, and though the exact type of specialised training in the various divisions has not yet been decided, ships that are not replaced will be refitted and given modern equipment. Officers and men who are interested should forward details of their name, rank/rating (and official number), permanent address, and intended profession, to the commanding officer nearest to their home, with details of any specialist qualifications held on release. The amount of training to be undertaken by those joining the R.N.V.R. cannot yet be stated, but it will be similar to that carried out before the War. Ratings being entered in the permanent R.N.V.R. will not be asked to enter into permanent engagements until final conditions of service in the R.N.V.R. are settled. The formation of an Air Branch of the R.N.V.R. is being considered, and the Royal Naval Volunteer (Wireless) Reserve is to be reconstituted, with centres at inland cities and towns, for the training of officers and telegraphist and radio mechanic ratings.

It will not be possible to absorb into the R.N.V.R. all temporary officers who have volunteered for transfer. Officers who cannot be accepted will, however, be offered Commissions in the Royal Naval Volunteer Supplementary Reserve.

**R.N.V. SUPPLEMENTARY RESERVE.**—Announcement of the re-establishment of the Royal Naval Volunteer Supplementary Reserve was made by the Admiralty on 21st August. It will be open to any officer who has held a temporary Commission in the Royal Navy, the Royal Naval Reserve, or the Royal Naval Volunteer Reserve since 2nd September, 1939, who wishes to maintain his connection with the Navy and who volunteers for naval service in the event of any future emergency. Those enrolled will not serve in peace, but will be required to undertake to report as ordered on receiving a calling-up notice on or after mobilization. They will be enrolled in the substantive rank that they held on dispersal. They will, however, be entitled to style themselves by their war service rank on all occasions and to wear the uniform of their war service rank on occasions of state and ceremony. Applications for consideration for enrolment in the R.N.V.S.R. should be forwarded to the Admiral Commanding Reserves, Queen Anne's Mansions, St. James's Park, London, S.W.1.

**DECORATION AND MEDAL.**—The Admiralty issued a statement on 21st August explaining the provisions under which officers and men of the Reserves can qualify, the former for the Reserve Decoration or Volunteer Officers' Decoration, the latter for the Long Service and Good Conduct Medal. Eligibility for each depends on length of service, but the matter was complicated by the grant to certain ratings of permanent or temporary Commissions which, under the regulations as formerly worded, appeared to disqualify them for both medals. It is now made clear that, for them, time served as an officer counts towards the qualification for the rating's decoration; and that for those who eventually achieved permanent Commissions, time served as a rating, either before September, 1939, or during the War, may be reckoned in varying degree towards the qualification for the officers' decoration.

**R.N.V.R. STRENGTH IN THE WAR.**—Admiral Sir John Cunningham, First Sea Lord, speaking at an R.N.V.R. Officers Commemoration Fund inaugural dinner at the R.N.V.R. Club, London, on 2nd October, said that at the peak period of the War, out of 68,000 officers in the Naval Service, nearly 44,000 wore the uniform of the R.N.V.R.



**ROYAL MARINES**

**ROYAL MARINE ASSOCIATION.**—The King has granted his patronage to the Royal Marine Association, which was formed after the 1914-18 War to further the comradeship and fellowship developed during hostilities. The Association numbered 26,000 in August, and is increasing at the rate of about 4,000 a month.

**PROMOTIONS.**—The following promotions to Major-General were announced by the Admiralty on 5th October:—

Colonel (Local Major-General) G. E. Wildman-Lushington (to date 1st October).

Colonel C. R. W. Lamplough (24th November).

Colonel (Acting Major-General) V. D. Thomas (25th November).

**RETIREMENTS.**—General Sir Thomas L. Hunton, K.C.B., M.V.O., O.B.E., to Retired List (25th June, 1946).

Major-General Thomas H. Jameson, C.B.E., D.S.O., to Retired List (1st April, 1946).

**PERMANENT COMMISSIONS.**—Approval has been given by the Admiralty for the transfer of a limited number of temporary officers to permanent Royal Marine Commissions. Among the conditions of transfer are that officers must have a minimum of six months commissioned service at the time of their application and have been first commissioned as temporary Second Lieutenant not later than their twenty-second birthday. Officers first commissioned between their twenty-second and twenty-third birthdays may be specially considered on their service records and individual qualifications.

**DOMINIONS AND COLONIES****AUSTRALIA**

**NEW DESTROYERS.**—Two destroyers of the "Battle" class are to be built in the Commonwealth for the Royal Australian Navy. The first has already been begun at the Cockatoo Island Dockyard, Sydney. The second will be built at the Williamstown Royal Dockyard, Melbourne. They will be of 3,300 tons, and have four 4.5-in. guns, ten torpedo tubes, and a large number of small A.A. guns.

**NEW ZEALAND**

**STRENGTH.**—The Minister of Defence, Mr. F. Jones, stated in Auckland on 17th September that the Royal New Zealand Navy would have an establishment of 1,800 officers and men by 30th June next, including 300 lent by the Royal Navy. Exchanges of officers and men would be made with the Royal Navy. Tactical exercises with the Australian and British Pacific naval forces were planned, and New Zealand cruisers would be attached, one at a time, to squadrons of the Royal Navy.

**INDIA**

Vice-Admiral Sir Geoffrey J. A. Miles, K.C.B., Flag Officer Commanding, Royal Indian Navy, relinquished the appointment of Deputy Commander-in-Chief in India with effect from 14th June, 1946.

The cruiser "Achilles," formerly in the New Zealand Navy, which took part in the River Plate Battle in December, 1939, has been acquired from the Admiralty by the Royal Indian Navy.

## FOREIGN NAVIES

## SPAIN

**LOSS OF A SUBMARINE.**—A report, received in London on 28th June, from the Ministry of Marine made known the loss of the submarine C.4, which was rammed and sunk by the destroyer "Lepanto" with the loss of 46 officers and crew.

## UNITED STATES

**PREPARATIONS FOR A THIRD ATOMIC BOMB TEST.**—Although not yet officially authorized, Seabees started in July to prepare for a third atomic-bomb test to be carried out some time next year. Admiral Blandy stated that the Joint Chiefs of Staff had given permission for them to remain at Bikini and they were preparing to lay down permanent moorings in the lagoon.

The Bikini "shelf" slopes at an angle of about 45 degrees and there is a depth of 1,000 fathoms close off-shore. This would permit of a deep-water explosion test, the result of which, it is anticipated, would be to damp the bomb's power and to create a hammer effect against the hulls of the target ships. In the case of the Second Test, where a bomb was exploded in relatively shallow water, it is surmized that much of the force was expended in the air.

**A ROCKET-DRIVEN TORPEDO.**—An American Press report states that the Westinghouse Electric Corporation has designed and manufactured a new type of torpedo for aircraft, propelled by the thrust of burning, expanding gases. It is claimed to be the simplest and least expensive of such weapons.

The engine of this "hydro-bomb," as it is called, is nothing more than a large pipe packed with solid fuel which when burning creates expanded gases that are expelled through a nozzle.

The torpedo can be dropped from a height of 600 feet from an aircraft flying at 300 m.p.h. When it hits the water the impact throws a switch over which ignites the rocket motor's solid fuel. Electrical controls, actuated by a gyroscope, keep the torpedo on its course and there is also depth control gear.

**NAVAL JET RESEARCH.**—The Navy Department's Bureau of Aeronautics has arranged for five scientific institutions a programme, known as "Project Squid," for basic research to develop "liquid rocket and jet-propelled weapons."

Some 150 scientists will work on this project under the direction of Dr. Hugh S. Taylor, head of Princeton's chemistry department.

The two-year contracts signed with these institutions total over \$2,000,000.

**NAVAL INTELLIGENCE SCHOOL.**—A Naval Intelligence School opened on 1st July with a first course of fifty-five naval and marine officers.

The course will take from 14 to 18 months, depending on the language studies. Each student will have to master thoroughly at least one foreign language. Fourteen will begin with Russian.

In addition, the studies will include geography, history, government, economics, politics, and customs.

## AIR NOTES

### GREAT BRITAIN

#### H.M. THE KING

**SOUTH AFRICAN TOUR** (see also "Navy Notes").—A Vickers Viking aircraft of the King's Flight left Northolt on 19th September on a proving flight to South Africa. The King's Flight is to be used there during the visit of the King and Queen in February next. Air Commodore E. H. Fielden, Captain of the King's Flight, was in command of the aircraft, which carried two crews of five each, two engineer officers, and five ground crew, who were to gain experience of the aircraft and also of the route and conditions in South Africa. The Viking is a standard passenger model and will eventually be used as the general communications aircraft of the King's Flight.

#### SECRETARY OF STATE FOR AIR

In connection with the proposed formation of a Ministry of Defence, the appointments of new heads for all the Service departments were announced on 5th October. Viscount Stansgate resigned as Secretary of State for Air, and was succeeded by Mr. Philip Noel-Baker, formerly Minister of State.

Lord Winster also resigned as Minister of Civil Aviation, on his appointment as Governor and Commander-in-Chief, Cyprus, and was succeeded by Lord Nathan, formerly Under-Secretary of State, War Office.

#### AIR MINISTRY CONFERENCE

Marshal of the Royal Air Force Lord Tedder, Chief of the Air Staff, held a conference at the Air Ministry from 7th to 9th August of the Commanders-in-Chief of R.A.F. Commands at home and overseas. This was the second conference in the series which started in March last, to consider current problems of the R.A.F. and to review progress in reorganization. The Chiefs of the Air Staffs of Canada, Australia and New Zealand accepted invitations to the conference.

#### FUTURE OF THE ROYAL AIR FORCE

Marshal of the Royal Air Force Lord Tedder referred to the future of the R.A.F. at a Press conference in London on 10th September. The following is taken from *The Times* report:—

The aim was to maintain a balanced peace-time air force, capable of meeting the many peace-time commitments and of taking the initial shock in the event of war, and of expanding to exert the full and decisive force of air power. The right balance between defence and offence must be struck between short-range tactical support for the land and sea forces, and long-range forces capable of operating strategically and tactically. We must also maintain an air transport force to ensure mobility for air and land forces.

The vital and urgent need to re-establish the permanent element of the Air Force was pressing. It was a race with time—a race to fill the force with volunteers before the drain-out of war-time personnel reduced it to impotence. The position was dangerous. A recruiting campaign had begun and a bounty scheme had been introduced. Results had so far been disappointing. He knew of no "new deal," but did believe in a "square deal." Men who joined the R.A.F. to do their bit for the nation deserved a square deal, and it was intended that the best should be done to ensure they got it.

## APPOINTMENTS

The appointment was announced on 27th July of Air Vice-Marshal C. W. Weedon to be Air Officer Commanding No. 41 Group, Maintenance Command. He had been Chief Engineer Officer, Air Command, South-East Asia, since November, 1945.

The appointment was announced on 21st September of Air Vice-Marshal A. C. Stevens to be Air Officer Commanding, No. 22 Group, Technical Command. He had been Air Officer Commanding, No. 4 Group, Transport Command, since December, 1945, and formerly commanded No. 47 Group.

## PROMOTION

The Rev. J. A. Jagoe, C.B.E., Chaplain-in-Chief, is granted the relative rank of Air Vice-Marshal (1st July, 1946).

## RETIREMENTS

Air Vice-Marshal A. C. Collier, C.B., C.B.E. (2nd July, 1946).

Air Commodore (temporary Air Vice-Marshal) H. S. Kerby, C.B., D.S.C., A.F.C., retaining the rank of Air Vice-Marshal (28th June, 1946).

Air Vice-Marshal Douglas Colyer, C.B., D.F.C., retaining the rank of Air Marshal (14th July, 1946).

TECHNICAL BRANCH.—Air Commodore (temporary Air Vice-Marshal) R. S. Aitken, C.B., C.B.E., M.C., A.F.C., retaining the rank of Air Vice-Marshal (20th July, 1946).

Air Commodore (temporary Air Vice-Marshal) G. B. A. Baker, C.B., C.B.E., M.C., retaining the rank of Air Vice-Marshal (28th July, 1946).

Air Vice-Marshal R. P. Willock, C.B. (2nd August, 1946).

Air Vice-Marshal Sir Albert Durston, K.B.E., C.B., A.F.C., retaining the rank of Air Marshal (13th August, 1946).

Air Vice-Marshal Douglas Harries, C.B., A.F.C. (19th August, 1946).

## HONOURS AND AWARDS

It was announced in the *London Gazette* on 19th July that the name, style and title of Marshal of the Royal Air Force Sir Cyril Louis Norton Newall (on whom a peerage was conferred in the Birthday Honours in June) would be Baron Newall, of Clifton-upon-Dunsmoor, in the County of Warwick (dated 18th July).

A supplement to the *London Gazette* published on 1st October announced the following awards "in recognition of gallant and distinguished services rendered during the period of operations against the Japanese in Malaya and the Netherlands East Indies terminating in March, 1942"—

*K.B.E.*—Air Vice-Marshal P. C. Maltby, C.B., D.S.O., A.F.C.

*C.B.E.*—Group Captain A. G. Bishop, O.B.E., A.F.C.

## PERSONNEL

OVERSEAS DUTY.—From 1st October, overseas duty for married and single R.A.F. men in the Mediterranean-Middle East Command, in Air Command South-East Asia, and in India was further reduced to two and a half years. From the same date, the scheme for home leave of 28 days for a limited number of men in the South-East Asia and India Commands, and of 14 days from the Central Mediterranean Force area was discontinued. It was not possible to repatriate immediately all the men affected by the further reduction in overseas service, but it was expected that all men due for return to Britain will have been brought home by the end of the year. British Air Forces of Occupation (Germany), R.A.F., Austria and Northern Italy will be entitled to 38 days leave a year after four months continuous service overseas. This leave is part of interim arrangements brought into force on 1st July.



**NEW RANK BADGES.**—It was announced on 11th September that the King had approved the designs for the new rank badges which will be worn by air-crew of the Royal Air Force below officer rank, after the reorganization of air-crew into new categories. For the present the badges will be worn both with service and working dress and will be embroidered in light blue silk on a service blue background about  $3\frac{1}{2}$  in. wide and  $2\frac{1}{2}$  in. deep. Gold embroidered badges of similar design will be worn on a new and improved pattern of service dress which is at present being considered. The basic design of the badges is the Royal Air Force eagle above a laurel wreath, the ranks being denoted as follows :—

Master Aircrew, by the addition of the Royal Arms above the eagle.

Aircrew I, by three stars within the laurel wreath, surmounted by the eagle and a crown.

Aircrew II, by three stars within the laurel wreath.

Aircrew III, by two stars within the laurel wreath.

Aircrew IV, by one star within the laurel wreath.

Aircrew Cadet, by the laurel wreath and eagle.

An additional note of colour is provided by the use of red silk in the Royal Arms worn by Master Aircrew and in the crown worn by Aircrew I. Master Aircrew will wear their badges on the lower sleeves, in the same position as the Warrant Officer's badge is worn; the other badges will be worn on the upper sleeves in place of rank chevrons.

**EDUCATION BRANCH.**—The new Education Branch of the Royal Air Force, in place of the civilian Educational Service that had existed in the R.A.F. since shortly after the end of the War of 1914-18, came into being on 1st October.

**RELIGIOUS OBSERVANCE.**—The Rev. J. A. Jagoe, Chaplain-in-Chief, began a tour of R.A.F. stations at home and abroad on 11th August, to discuss questions raised by the return to peace-time conditions. Although compulsory church parades have ceased, Sunday services will continue at which attendance, except for apprentices and cadets, will be voluntary. Cadets, including aircrew cadets, and apprentices will parade for these services. No unessential duty or organized games will be permitted until the services are over. The "chaplain's hour" will continue on a voluntary basis during working hours, and moral leadership courses are to remain. The daily reading of prayers at the colour hoisting, or at some other suitable parade, is to be resumed.

**R.A.F. REGIMENT.**—It was announced in July that the Air Council had decided that the R.A.F. Regiment, formed in February, 1942, for the defence of airfields, should continue as an integral part of the R.A.F. It will maintain rifle, armoured, and light anti-aircraft squadrons for service at home and oversea. Some men will be trained as airborne and parachute troops, others as air gunners. Men may now join the regiment direct from civilian life for an initial period of five years. From men still serving who wish to extend their service, selections will be made from those suitable for N.C.O. rank.

#### SPECIAL FLIGHTS

**NEW ZEALAND IN 60 HOURS.**—The R.A.F. Lancaster "Aries" left Blackbushe airfield, Surrey, on 21st August on a mission to New Zealand, and arrived at Ohakea airfield, near New Plymouth, Wellington, on 24th August. The Royal Aero Club in London announced that, subject to confirmation on receipt of the necessary documents, the "Aries" had set up three new officially observed international point-to-point records: London to Karachi, 19 hrs. 14 min.; London to Darwin, 45 hrs. 35 min.; and London to Wellington, 59 hrs. 50 min. The officer in charge of the flight, Air Commodore N. H. D'Aeth, said considerable time was lost on the first leg of the flight through heavy icing conditions, which made it impossible to fly straight over the Alps, and extra fuel consumption necessitated a landing at Karachi. Then a monsoon was encountered, and because the aircraft could not fly above it, a call was made at Ceylon. The "Aries" returned to

Shawbury airfield, Shropshire, on 2nd October after a seven-day flight from Melbourne, Australia. Confirmation of the three speed records by the International Aeronautical Federation was announced on 9th October.

**TOUR OF U.S.A.**—No. 35 Squadron, Bomber Command, R.A.F., which left Graveley airfield, Huntingdonshire, on 8th July for the United States to take part in the Air Forces Day at Los Angeles on 1st August, returned to Graveley on 29th August. Over 300,000 miles had been flown by the aircraft without any technical failure of engines or airframes in flight. The Squadron made a 10,000-mile tour of the United States, visiting nearly every large city.

**CLIMATIC TEST FLIGHT.**—A York aircraft of R.A.F. Transport Command made a 16,000-mile flight from Northolt to Singapore and back in September, leaving on the 7th and returning on the 25th. The flight was arranged primarily to give members of the design staffs of the British aircraft industry an opportunity to see the extreme climatic conditions in which their aircraft have to operate. The route and time were deliberately chosen so that the flight would be made in some of the worst climatic conditions British aircraft are likely to meet in overseas commands or on Empire routes, but the time-table was rigidly adhered to. Air Commodore G. S. Roberts, Senior Deputy Director of the Ministry of Supply Aircraft Research and Development Branch, was the senior member of the party, and the chief pilot was Squadron Leader F. W. Dewell. During the whole of the 85 hours' flying at a speed of about 200 miles an hour the engines ran perfectly.

**BOMBER LIAISON MISSION.**—The first overseas liaison mission of the R.A.F. Central Bomber Establishment began on 9th September, when a Lincoln aircraft left Blackbushe for a five weeks tour of the Far East, Australia and New Zealand. This was also the first visit of a Lincoln bomber to Australia and New Zealand. A New Zealander, Group Captain S. C. Elworthy, was in charge of the mission, which was to discuss bomber tactics with certain R.A.F. overseas commands and with the R.A.A.F. and R.N.Z.A.F.

#### HIGH SPEED FLIGHT—WORLD RECORD

On 7th September, Group Captain E. M. Donaldson, D.S.O., A.F.C., and Squadron Leader W. A. Waterton, A.F.C., of the R.A.F. High Speed Flight, Tangmere, exceeded the world air speed record of 606 miles an hour established at Herne Bay on 7th November, 1945, by Group Captain H. J. Wilson, A.F.C. In four laps over a course off the Sussex coast, near Littlehampton, Group Captain Donaldson averaged 616 miles an hour and Squadron Leader Waterton 614 miles an hour. Donaldson's lap speeds were 623, 610, 623 and 609; Waterton's were 606, 620, 608 and 620. The aircraft used were Gloster Meteor jet-propelled fighters. A further attempt on 24th September to improve on the record was unsuccessful.

The High Speed Flight was disbanded on 27th September.

Confirmation of Group Captain Donaldson's average speed of 616 miles an hour (991 km.p.h.) as a world record by the International Aeronautical Federation was announced on 9th October.

#### BATTLE OF BRITAIN MEMORIAL

The King has consented to unveil the Battle of Britain Memorial in the R.A.F. Chapel, Westminster Abbey, at noon on Thursday, 10th July, 1947, the seventh anniversary of the first day of the battle. A chapel has been set aside for the memorial by the Dean and Chapter at the east end of the Abbey. The window, designed and made by Mr. Hugh Easton, will include the armorial badges of the 63 Fighter Squadrons which fought in the battle and the flags of the nations whose pilots and air crews took part. An appeal for £20,000 to cover the cost of the memorial was made in December, 1943, by Marshal of the Royal Air Force Lord Trenchard, Chairman, and Air Chief Marshal Lord Dowding, Commander-in-Chief, Fighter Command, during the battle. A sum of £69,395 was subscribed. The surplus will be given to the R.A.F. Benevolent Fund.

Massed formations of bombers and fighters, about 300 in all, flew over London and South-East England on 14th September to commemorate the sixth anniversary of the turning point in the Battle of Britain. Next day, Sunday, the 15th—the actual anniversary of the day in 1940 when the R.A.F. took their greatest toll, destroying 185 German aircraft—services of thanksgiving were held in Westminster Abbey and in many other churches at home and abroad. The Abbey service was followed by a ceremony at the R.A.F. Memorial on the Victoria Embankment, when Lord Trenchard unveiled an addition which reads: "This inscription is added in remembrance of those men and women of the Air Forces of Every Part of the British Commonwealth and Empire who Gave their Lives, 1939-1945." The Prime Minister, Mr. Attlee, was among those present in the Abbey and at the subsequent unveiling on the Embankment.

#### AUXILIARY AIR FORCE

The following have been appointed to the reconstituted Auxiliary Air Force as Squadron Leaders to command the squadrons named (1st August, 1946) :—

- No. 601 (County of London).—Hon. Maxwell Aitken, D.S.O., D.F.C., M.P.
- No. 604 (County of Middlesex).—John Cunningham, D.S.O., D.F.C.
- No. 603 (City of Edinburgh).—George Kemp Gilroy, D.S.O., D.F.C.
- No. 500 (County of Kent).—Patrick Green, O.B.E., A.F.C.
- No. 600 (City of London).—Thomas Norman Hayes, D.F.C.
- No. 616 (South Yorkshire).—Kenneth Holden, D.F.C.
- No. 607 (County of Durham).—Joseph Robert Kayll, D.S.O., O.B.E., D.F.C.
- No. 615 (County of Surrey).—Ronald Gustave Kellett, D.S.O., D.F.C.
- No. 610 (County of Chester).—Peter Gilbert Lamb, A.F.C.
- No. 611 (West Lancashire).—William Johnson Leather, D.F.C.
- No. 502 (Ulster).—William Hunter McGiffin.
- No. 613 (City of Manchester).—James Storrs Morton, D.F.C.
- No. 602 (City of Glasgow).—Marcus Robinson, A.F.C.
- No. 504 (County of Nottingham).—Antony Hartwell Rook, D.F.C., A.F.C.
- No. 612 (County of Aberdeen).—Ramsay Roger Russell.
- No. 609 (West Riding).—Patrick Anthony Womersley, D.F.C.

The names of the officers appointed to command the remaining A.A.F. squadrons, Nos. 501, 605, 608 and 614, will be issued later. Further announcements will be made by the Air Ministry when the individual squadrons are ready to deal with applications from intending recruits, who must be officers and men who have served with the Royal Air Force.

#### DOMINIONS AND COLONIES

##### AUSTRALIA

Mr. Drakeford, the Australian Air Minister, announced in September that the Commonwealth Government had approved the establishment of an interim R.A.A.F. with a strength of 15,000, among whose duties would be the maintenance of air transport communications with Japan, including staging posts en route.

The Government of Australia has appointed Air Commodore U. E. Ewart, R.A.A.F., to be its representative on the Board of Governors of the College of Aeronautics, opened on 15th October at the R.A.F. station at Cranfield, near Bedford.

##### SOUTHERN RHODESIA

The Air Ministry announced on 22nd July that the draft agreement on the main features of an air training scheme in Southern Rhodesia had been accepted by the Governments of the United Kingdom and of Southern Rhodesia. Earlier in the year, an Air Ministry mission headed by Air Marshal Sir Roderic Hill, Air Member of Council for Training, visited Southern Rhodesia to discuss arrangements for training pilots and navigators of the peace-time R.A.F. there.





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# INDEX

## FEBRUARY TO NOVEMBER, 1946

	<i>Page</i>
AEROPLANE, A History Book of the. (May, 1946) ... ..	248
AIRCRAFT for the Army, The Future of Light. (August, 1946) ... ..	408
AIR Defence of Great Britain, The. ( <i>Lecture.</i> ) (Air Marshal Sir Roderic Hill, K.C.B., M.C., A.F.C. May, 1946) ... ..	153
AIR Force and Its Failure, The German. (November, 1946) ... ..	503
AIR Forces, The Development of Tactical. (May, 1946) ... ..	211
AIR, Land and Sea Warfare. ( <i>Lecture.</i> ) (Marshal of the Royal Air Force Sir Arthur Tedder, G.C.B. February, 1946) ... ..	59
AFRICAN Colonial Forces, Our. (Major F. H. G. Higgins. May, 1946) ... ..	270
AMPHIBIOUS Operations. ( <i>Lecture.</i> ) (Brigadier A. H. Head, C.B.E., M.C., M.P. November, 1946) ... ..	485
ANTI-TANK, Tank and. (February, 1946) ... ..	38
ARMOUR as the Arm of Mobility, The Future of. (August, 1946) ... ..	396
ARMY Cadet Force and the Regular Army, The. ("Sentry." May, 1946) ... ..	274
ARMY Welfare, Six Years of. (February, 1946) ... ..	52
ARMY Welfare (Correspondence.) (May, 1946) ... ..	285
ARMY Welfare (Correspondence.) (August, 1946) ... ..	432
ATOMIC Bomb Tests. (November, 1946) ... ..	590
AUXILIARY Territorial Service in the War, The Work of. (May, 1946) ... ..	241
BEHIND the Enemy's Lines in Burma. ( <i>Lecture.</i> ) (Brigadier B. E. Fergusson, D.S.O. August, 1946) ... ..	347
BRITISH Commonwealth Occupation Force. (Lieut.-Colonel F. J. C. Piggott, D.S.O. November, 1946) ... ..	559
BRITISH Minelaying in the War—A Combined Campaign. (August, 1946) ... ..	413
CASUALTY Evacuation and Provision of Reinforcements. (Colonel J. D. Welch and Major F. R. Bond. February, 1946) ... ..	100
CITIZEN Army, Training a. (May, 1946) ... ..	266
COAL in War. (Colonel W. R. Gordon, O.B.E. November, 1946) ... ..	561
CHURCHILL's Address to U.S. Army and Navy Officers. (General Service Notes. May, 1946) ... ..	287
COLONIAL Forces, Our African. (May, 1946) ... ..	270
COMMAND, Supreme. (May, 1946) ... ..	196
COMPOSITION and Design of Our Post-War Fleet, The. (Lieutenant D. Trimmingham, R.N.V.R. February, 1946) ... ..	73
CONVOYS in Peacetime, Ocean. (August, 1946) ... ..	401
CONVOYS, Russian, 1941-1945. (May, 1946) ... ..	227
CORPS of Invalids. (Captain C. G. T. Dean. November, 1946) ... ..	584
DEFENCE of Great Britain, Air. (May, 1946) ... ..	153
DEFENSIVELY Equipped Merchant Ship and the Future, The. (Captain R. C. Bayne, R.N. August, 1946) ... ..	403
DEVELOPMENT of Tactical Air Forces, The. ( <i>Lecture.</i> ) (Air Marshal Sir Arthur Coningham, K.C.B., K.B.E., D.S.O., M.C., D.F.C., A.F.C. May, 1946) ... ..	211
EARLY Days of Mechanization, The. (Major-General S. Capel Peck, C.B., D.S.O. August, 1946) ... ..	387

	<i>Page</i>
EDUCATION and the Services. (Lieutenant-Commander R. F. Colville, D.S.C., R.N. May, 1946) ... ..	209
EMPIRE Force for Japan. (General Service Notes. February, 1946) ...	123
FAR East, Post-War Impressions of the. (August, 1946) ... ..	421
FIELD Service Regulations, Vol. III. A Post-War Review of. (August, 1946)	367
FILING SYSTEM for the Army, A New. (February, 1946) ... ..	97
FILING System, A Naval. ( <i>Correspondence.</i> ) (August, 1946) ... ..	433
FUELLING at Sea. (Captain P. C. S. Tupper Carey, R.N. August, 1946) ...	382
FUTURE of Armour as the Arm of Mobility. (Major A. J. Wilson, M.C. August, 1946) ... ..	396
FUTURE of Light Aircraft for the Army, The. (Major R. E. S. Skelton. August, 1946) ... ..	408
FUTURE of the Royal Naval Volunteer Reserve. (Captain T. D. Manning, V.D., R.N.V.R. November, 1946) ... ..	521
GERMAN Air Force and Its Failure, The. ( <i>Lecture.</i> ) (Air Vice-Marshal Sir Thomas Elmhirst, K.B.E., C.B., A.F.C. November, 1946) ... ..	503
GERMANY, Military Government in. (February, 1946) ... ..	17
GIBRALTAR Air Base, The. (November, 1946) ... ..	536
HISTORY Book of the Aeroplane, A. (Group Captain G. W. Williamson, O.B.E., M.C. May, 1946) ... ..	248
IMPERIAL Defence. (Commander G. M. Bennett, D.S.C., R.N. May, 1946)	165
INFANTRY, Recruiting for. (November, 1946) ... ..	526
INVALIDS, The Corps of. (November, 1946) ... ..	584
JAPAN and the Japanese. ( <i>Lecture.</i> ) (H. Vere Redman. February, 1946)	112
JAPAN, Empire Force for. (February, 1946) ... ..	123
JOINT Planning Staffs. (Lieut.-Colonel G. P. D. Blacker, C.B.E., R.A. February, 1946) ... ..	69
JUNGLE Warfare. (Brigadier C. R. A. Swynnerton, D.S.O. February, 1946)	56
LOWER Deck of the Future, The. (Lieutenant-Commander G. F. Agutter, R.N. May, 1946) ... ..	253
LEAGUE of Nations, The End of the. (February, 1946) ... ..	284
LEYTE Battle, The. ( <i>Correspondence.</i> ) (February, 1946) ... ..	285
LOGISTICS of Operations in Europe. (Brigadier C. Ravenhill, O.B.E. November, 1946) ... ..	495
MATERIAL Reserves. (Lieutenant-Commander R. F. Colville, D.S.C., R.N. November, 1946) ... ..	567
MECHANIZATION 1933-1939. (Lieut.-General Sir Giffard Martel, K.C.B., K.B.E., D.S.O., M.C. November, 1946) ... ..	577
MECHANIZATION, The Early Days of. (August, 1946) ... ..	387
MERCHANT Ship and the Future, The Defensively Equipped. (August, 1946)	403
MIDDLE East, Russia's Aspirations in. (February, 1946) ... ..	121
MILITARY Government in Germany. ( <i>Lecture.</i> ) (Major-General G. W. R. Templer, C.B., D.S.O., O.B.E. February, 1946) ... ..	17
MINELAYING in the War, British. (August, 1946) ... ..	413
NAVIES of the War, The. ("Navarino," August, 1946) ... ..	361
NAVY's Part in the Victory in Europe, The. ( <i>Lecture.</i> ) (Rear-Admiral G. E. Creasy, C.B., C.B.E., D.S.O., M.V.O. February, 1946) ...	1
NEW Filing System for the Army, A. (Major E. A. Runacres, R.E. February, 1946) ... ..	97



	<i>Page</i>
OCCUPATION FORCE, British Commonwealth. (November, 1946) ...	559
OCEAN Convoys in Peacetime. (Commander C. H. Williams, R.D., R.N.R. August, 1946) ...	401
OFFICER-PRODUCING Class, The. (Major M. J. P. M. Corbally, May, 1946)	204
OPERATIONS—Higher Formations. A Post-War Review of F. S. R. Vol. III. (Brigadier R. M. P. Carver. August, 1946) ...	367
PACIFIC, The Victory in the. (November, 1946) ...	539
PAY and Pensions. (General Service Notes). (February, 1946) ...	123
PEACE, After One Year of. (August, 1946) ...	428
PEACE, Role of the R.A.F. in the Preservation of. (February, 1946) ...	77
PERSIAN Problem, The. (International Situation). (May, 1946) ...	281
PLANNING Staffs, Joint. (February, 1946) ...	69
POST War Fleet, The Composition and Design of our. (February, 1946) ...	401
POST-WAR Impressions of the Far East. (Colonel E. Foster Hall, M.C., August, 1946) ...	421
RECRUITING for Infantry. (Brigadier A. H. G. Ricketts, D.S.O., O.B.E. November, 1946) ...	526
REGIMENT, The. (Lieut.-Colonel R. J. A. Kaulback, D.S.O., <i>p.s.c.</i> May, 1946)	257
REINFORCEMENTS, Casualty Evacuation and Provision of. (February, 1946)	100
RESERVES, Material. (November, 1946) ...	567
ROLE of the R.A.F. in the Preservation of Peace. (Group Captain G. C. Barrett, C.B.E., R.A.F. February, 1946) ...	77
ROYAL Engineers in North-West Europe, The Work of. (May, 1946) ...	176
ROYAL Naval Volunteer Reserve, The Future of the. (November, 1946) ...	521
RUSSIAN Convoys, 1941-1945. ( <i>Lecture.</i> ) (Captain I. M. R. Campbell, D.S.O., R.N. May, 1946) ...	227
RUSSIA's Aspirations in the Middle East (International Situation.) February, 1946) ...	121
SCIENCE and the Services. ( <i>Lecture.</i> ) (Sir Henry Tizard, K.C.B., A.F.C., F.R.S. August, 1946) ...	333
SECOND Sedan, The. Review Article. (Lieut.-Colonel Alfred Burne, D.S.O. November, 1946) ...	570
SECURITY Council, The. (International Situation) (February, 1946) ...	120
SECURITY Force, U.S.A's. Contribution to a. (February, 1946) ...	121
SIX Years of Army Welfare. ("A Local Army Welfare Officer." February, 1946)	52
STAFFS, Joint Planning. (February, 1946) ...	69
STRATEGY of the South-East Asia Campaign, The. ( <i>Lecture.</i> ) (Admiral Viscount Mountbatten, G.C.V.O., K.C.B., D.S.O., A.D.C. November 1946) ...	469
SUPREME Command. (Brigadier W. G. S. Thompson, O.B.E., I.A. May, 1946) ...	196
TACTICAL Air Forces, The Development of. (May, 1946) ...	211
TANK and Anti-Tank. (Brigadier R. M. P. Carver, C.B.E., D.S.O., M.C. February, 1946) ...	38
TANKS in Malta 1940. ( <i>Correspondence.</i> ) (May, 1946) ...	286
TRAINING a Citizen Army. (Major E. A. Runacres, R.E. May, 1946) ...	266
U.S.A's. Contribution to a Security Force. (International Situation.) (February, 1946) ...	121
VICTORY in Europe—The Navy's Part in the. (February, 1946) ...	I

	<i>Page</i>
VICTORY in the Pacific, The. ( <i>Lecture.</i> ) (Admiral R. A. Spruance, U.S.N. November, 1946) ... ..	539
WELFARE, Six Years of Army. (February, 1946) ... ..	52
WHAT to Read. (August, 1946) ... ..	414
WOMEN's Auxiliary Air Force in the War, The (Air Chief Commandant Lady Welsh, D.B.E. August, 1946) ... ..	376
WOMEN's Royal Naval Service in the War, The. ( <i>Lecture.</i> ) (Dame Vera Laughton Mathews, D.B.E. February, 1946) ... ..	83
WORK of the Auxiliary Territorial Service in the War, The. (Chief Controller Dame Leslie Whateley, D.B.E. May, 1946) ... ..	241
WORK of the Royal Engineers in North-West Europe, 1944-1945. ( <i>Lecture.</i> ) (Major-General Sir John D. Inglis, K.B.E., C.B., M.C. May, 1946) ... ..	176

## FRONTISPIECES

Admiral Sir Bertram Ramsay, K.C.B., K.B.E., M.V.O.—The Allied Naval Commander Expeditionary Force. (February, 1946.)
Spitfires Marks XXI and XXII—The Last of a Long Line of Famous Fighters. (May, 1946.)
The Victory Parade—8th June, 1946. (August, 1946)
Admiral Lord Louis Mountbatten, G.C.V.O., K.C.B., D.S.O., A.D.C.—The Supreme Allied Commander, South-East Asia. (November, 1946.)

## PLATES

Mechanized Types, 1926. (August, 1946) ... ..	<i>facing page</i> 387
The Gibraltar Air Base. (November, 1946) ... ..	538
U.S. Aircraft Carrier "Bennington." (November, 1946) ... ..	539

## MISCELLANEOUS

THE INTERNATIONAL SITUATION ... ..	120, 281, 428, 593
CORRESPONDENCE ... ..	— 285, 432, 595
GENERAL SERVICE NOTES ... ..	123, 287, 434, 603
NAVY NOTES ... ..	124, 290, 437, 618
ARMY NOTES ... ..	133, 299, 447, 608
AIR NOTES ... ..	140, 306, 454, 627
REVIEWS OF BOOKS ... ..	146, 313, 461, 596
ADDITIONS TO THE LIBRARY ... ..	150, 317, 465, 599
ANNIVERSARY MEETING (115TH) ... ..	— 320 —

## AUTHORS

AGUTTER, Lieutenant-Commander G. F., R.N. (The Lower Deck of the Future. May, 1946) ... ..	253
"A LOCAL ARMY WELFARE OFFICER." (Six Years of Army Welfare. February, 1946) ... ..	52
BARRETT, Group Captain G. C., C.B.E., R.A.F. (The Role of the R.A.F. in the Preservation of Peace. February, 1946) ... ..	77
BAYNE, Captain R. C., R.N. (The Defensively Equipped Merchant Ship and the Future. August, 1946) ... ..	403
BENNETT, Commander G. M., D.S.C., R.N. (Imperial Defence. May, 1946) ... ..	165

BLACKER, Lieut.-Colonel G. P. D., C.B.E., R.A. (Joint Planning Staffs. February, 1946) ... ..	69
BOND, Major F. R. (Casualty Evacuation and Provision of Reinforcements. February, 1946) ... ..	100
BURNE, Lieut.-Colonel Alfred, D.S.O. (The Second Sedan. November, 1946)	570
CAMPBELL, Captain I. M. R., D.S.O., R.N. (Russian Convoys. May, 1946)	227
CAREY, Captain P. C. S. Tupper, R.N. (Fuelling at Sea. August, 1946) ...	382
CARVER, Brigadier R. M. P., C.B.E., D.S.O., M.C. (Tank and Anti-Tank. February, 1946) ... ..	38
(Operation—Higher Formations. A Post-War Review of F.S.R. Vol. III. August, 1946) ... ..	367
COLVILLE, Lieutenant-Commander R. F., D.S.C., R.N. (Education and the Services. May, 1946) ... ..	209
(Material Reserves. November, 1946) ... ..	567
CONINGHAM, Air Marshal Sir Arthur, K.C.B., K.B.E., D.S.O., M.C., D.F.C., A.F.C. (The Development of Tactical Air Forces. <i>Lecture.</i> May, 1946)	211
CORBALLY, Major M. J. P. M. (The Officer-Producing Class, May, 1946) ...	204
CREASY, Rear-Admiral G. E., C.B., C.B.E., D.S.O., M.V.O. (The Navy's Part in the Victory in Europe. <i>Lecture.</i> February, 1946) ... ..	I
DEAN, Captain C. G. T. (The Corps of Invalids. November, 1946) ... ..	584
ELMHIRST, Air Vice-Marshal Sir Thomas, K.B.E., C.B., A.F.C. (The German Air Force and Its Failure. <i>Lecture.</i> November, 1946) ... ..	503
FERGUSSON, Brigadier B. E., D.S.O. (Behind the Enemy's Lines in Burma. <i>Lecture.</i> August, 1946) ... ..	347
FOSTER-HALL, Colonel E., M.C. (Post-War Impressions of the Far East. August, 1946) ... ..	421
GORDON, Colonel W. R., O.B.E. (Coal in War. November, 1946) ... ..	561
HEAD, Brigadier A. H. C.B.E., M.C., M.P. (Amphibious Operations. <i>Lecture.</i> November, 1946) ... ..	485
HIGGINS, Major F. H. G. (Our African Colonial Forces. May, 1946) ... ..	270
HILL, Air Marshal Sir Roderic, K.C.B., M.C., A.F.C. (The Air Defence of Great Britain. <i>Lecture.</i> May, 1946) ... ..	153
INGLIS, Major-General Sir John D., K.B.E., C.B., M.C. (The Work of the Royal Engineers in North-West Europe, 1944-1945. <i>Lecture.</i> May, 1946.) ... ..	176
KAULBACK, Lieut.-Colonel R. J. A., D.S.O., <i>p.s.c.</i> (The Regiment. May, 1946)	257
LAUGHTON MATHEWS, Dame Vera, D.B.E. (The Women's Royal Naval Service in the War. <i>Lecture.</i> February, 1946) ... ..	83
MANNING, Captain T. D., V.D., R.N.V.R. (The Future of the R.N.V.R. November, 1946) ... ..	521
MARTEL, Lieut.-General Sir Giffard, K.C.B., K.B.E., D.S.O., M.C. (Mechanization 1933-1939. November, 1946) ... ..	577
MOUNTBATTEN, Admiral the Viscount, of Burma, G.C.V.O., K.C.B., D.S.O., A.D.C. (The Strategy of the South-East Asia Campaign. <i>Lecture.</i> November, 1946) ... ..	469
"NAVARINO." (The Navies of the War. August, 1946) ... ..	361
PECK, Major-General S. Capel, C.B., D.S.O. (The Early Days of Mechanization. August, 1946) ... ..	387

	<i>Page</i>
PIGGOTT, Lieut.-Colonel F. J. C., D.S.O. (British Commonwealth Occupation Force. November, 1946) ... ..	559
RAVENHILL, Brigadier C., O.B.E. (Logistics of Operations in Europe. November, 1946) ... ..	495
REDMAN, H. Vere. (Japan and the Japanese. ( <i>Lecture.</i> ) February, 1946) ...	112
RICKETTS, Brigadier A. H. G., D.S.O., O.B.E. (Recruiting for Infantry. November, 1946) ... ..	526
RUNACRES, Major E. A., R.E. (A New Filing System for the Army. February, 1946) ... ..	97
(Training a Citizen Army. May, 1946) ... ..	266
"SENTRY." (The Army Cadet Force and the Regular Army. May, 1946) ...	274
SKELTON, Major R. E. S. (The Future of Light Aircraft for the Army. August, 1946) ... ..	408
SPRUANCE, Admiral R. A., U.S.N. (The Victory in the Pacific. ( <i>Lecture.</i> ) November, 1946) ... ..	539
SWYNNERTON, Brigadier C. R. A., D.S.O. (Jungle Warfare. February, 1946) ...	56
TEDDER, Marshal of the R.A.F. Sir Arthur, G.C.B. Air, Land and Sea Warfare. ( <i>Lecture.</i> ) February, 1946) ... ..	59
TEMPLER, Major-General G. W. R., C.B., D.S.O., O.B.E. (Military Government in Germany. ( <i>Lecture.</i> ) February, 1946) ... ..	17
THOMPSON, Brigadier W. G. S., O.B.E., I.A. (Supreme Command. May, 1946) ... ..	196
TIZARD, Sir Henry, K.C.B., A.F.C., F.R.S. (Science and the Services. ( <i>Lecture.</i> ) August, 1946) ... ..	333
TRIMINGHAM, Lieutenant D., R.N.V.R. (The Composition and Design of Our Post-War Fleet. February, 1946) ... ..	73
WELCH, Colonel J. D. (Casualty Evacuation and Provision of Reinforcements. February, 1946) ... ..	100
WELSH, Air Chief Commandant Lady, D.B.E. (The Women's Auxiliary Air Force in the War. August, 1946) ... ..	376
WHATELEY, Chief Controller Dame Leslie, D.B.E. (The Work of the A.T.S. in the War. May, 1946) ... ..	241
WILLIAMS, Commander C. H., R.D., R.N.R. (Ocean Convoys in Peacetime. August, 1946) ... ..	401
WILLIAMSON, Group Captain G. W., O.B.E., M.C. (A History Book of the Aeroplane. May, 1946) ... ..	248
WILSON, Major A. J., M.C. (The Future of Armour as the Arm of Mobility. August, 1946) ... ..	396



Page

559

495  
112

526

97  
266  
274

408

539  
56

59

17

196

333

73

100

376

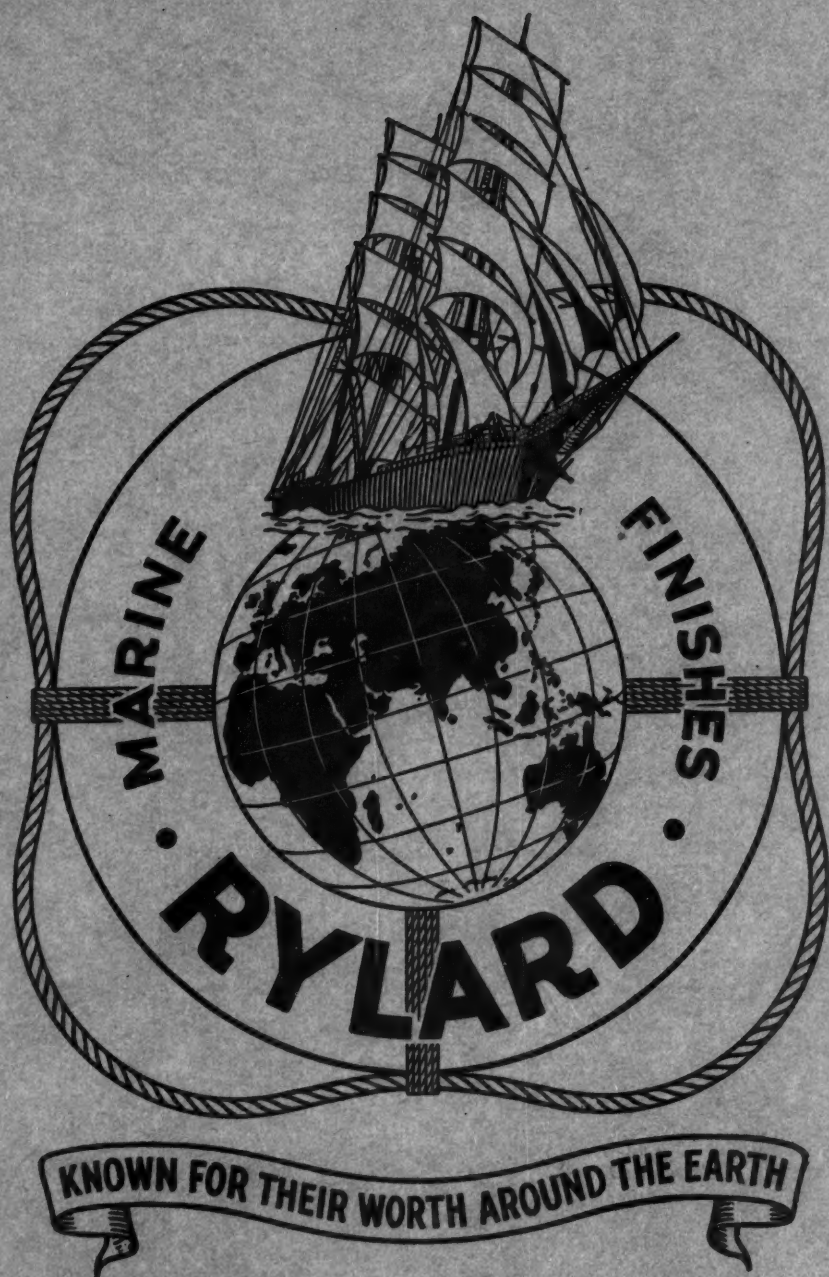
241

401

248

396







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